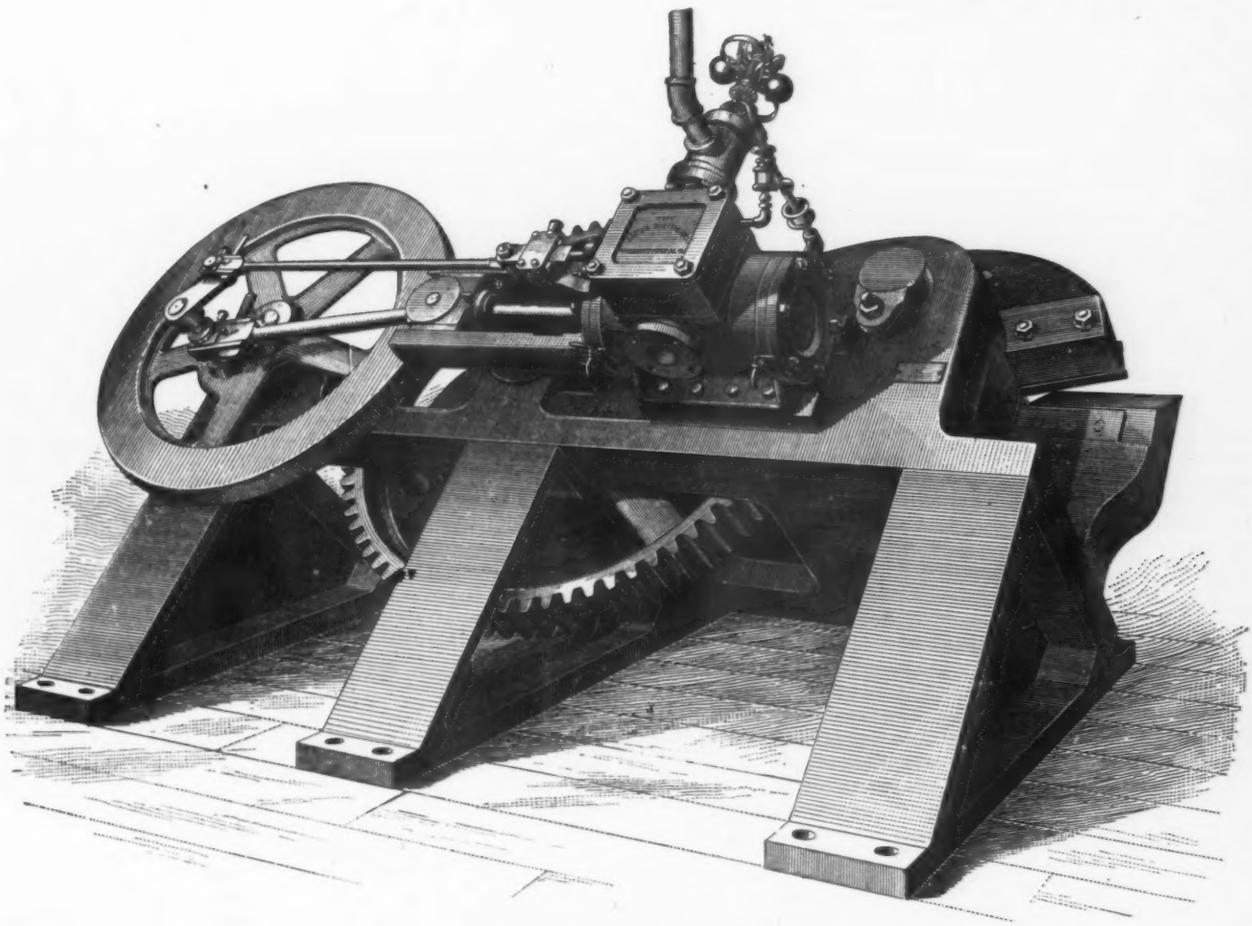
THE IRON AGE

THURSDAY, MAY 8, 1890.

Lever Shear.

We illustrate herewith a Lever Shear lately built by the Lloyd Booth Company, Youngstown, Ohio, for the Paige Tube Company, of Warren, Ohio. This shear was designed especially for cutting socket iron with ends bevelled to an angle of forty-five degrees, thus scarfing the ends for welding at the same time the iron is cut to length. An adjustable gauge is also attached so that the iron will be cut to exact lengths, and is so constructed that at the instant the piece is cut off, the gauge moves back and allows the piece sheared to free itself. The shear used in this instance is one of their size No. 4, which has a capacity for cutting 7 x 1 inch or 2¼ inches square iron cold, and is supported on three stands, which are bolted to planed surfaces on the bottom face of bed, and inclines the shear to the desired angle. The lower knife seat is planed so as to give a flat face to rest the bar on while being cut. To the shear is attached an 8½ x 12-inch engine working direct on the fly-wheel, and to the lower end of the engine shaft there is attached an adjustable step, which allows any wear caused by the shaft being placed on an angle to be taken up. The shear is strongly geared and the gearing is all contained within the bed, thus making the whole machine very compact.



LEVER SHEAR, BUILT BY THE LLOYD-BOOTH COMPANY.

The growing Georgia town of Americus is becoming interested in the recent discoveries of iron ore in paying quantities near Richland, Ga., and may take a vigorous hand at their development. Most of these lands are at present owned by a syndicate, of which Col. J. M. Lowe, of Buena Vista, is at the head.

Electric Railways.*

BY EUGENE GRIFFIN.

Even were electricity as expensive as horse-power, its numerous advantages would ultimately result in its general adoption, but as a matter of fact, it shows a very considerable saving over horse-power. This to be expected. If we have one source of power—one power station—instead of a thousand, we ought to generate the power at a less cost. If we have efficient motors and a well-constructed line, we should expect to utilize this power with little waste. Of 100 horse-power produced in the steam engine, 92 is converted into electricity and goes out of the station over the line as electrical energy. The loss in the line need not exceed 10 per cent., though in some cases it may be economy to allow a larger loss. We thus have 82.8 horse-power delivered to the motor on the car. If the commercial efficiency of the motors and gearing be 75 per cent. we have 62.1 per cent. horse-power utilized in moving the car, or a total efficiency of 62.1 per cent. Of course, we may fall below this figure. The actual power required per car depends upon the grades, the speed, the curves, the kind and condition of track, the size and weight of the car, the average load, &c., conditions so variable that it is hopeless to try to determine any average figure. The power will range from 4 horse-power to 9 horse power under ordinary conditions, and may increase very considerably under extraordinarily bad conditions. The cost of power at the station depends upon the kind and size of the engines, the price of coal, the management of the station, &c. It ranges as low as $\frac{9}{10}$ cents per car mile, and as high as 7 cents per car mile. The latter is a very extreme case and does not represent the actual cost. This price is paid for power for a single car operated under the most disadvantageous conditions; this car, however, yields a better return to the railway company than any other car on its entire system. This indicates that a high price is not always incompatible with economical results. The cost of repairs depends very largely upon the care bestowed upon the apparatus, and any figures given without a full statement of all the special conditions would be misleading. I have known the cost of material for repairs on a large road to run as low as 9 mills per car mile for one month, and I have known it to go very much higher.

Speed is not only an important factor in determining the value of electric railways to the public, but it is equally important to the railway manager as a source of economy. If we average six miles

* From a lecture delivered before the Franklin Institute of Philadelphia, and published in full in the *Journal* of the institue.

per hour with horses and nine miles per hour with electricity, it is evident that in the latter case one car does 50 per cent. more work with a corresponding saving in the item of wages of conductors and drivers. In the crowded city streets we cannot hope to gain much speed. In the suburbs the gain is only limited by considerations of safety. From Harvard Square, in Cambridge, to the end of the line, in Arlington, the electric cars average about 11 miles per hour, including stops—better time than is made by the elevated roads in New York City. On the Watervliet road, between Albany and Troy, the following is the record of one month's work:

MILEAGE OF WATERVLIET CARS, DECEMBER, 1889.

Average number of cars in daily service	7¼
Total mileage, 31 days	31,340
Average daily mileage	1,011
Average daily mileage, per car	139

On December 20, 1889, we have the record of five cars, showing an average per car of 186 miles.

On January 3, 1890, we have a record of five cars, showing an average per car of 186 miles.

This is an imposition upon the motors. It is requiring more than we ask of the steam locomotive which runs under the most favorable conditions as to grades, curves and track. I give these figures as an instance of what can be done and what is done, not as an example of what should be done.

Increased speed is a great boon to the public always clamoring for rapid transit. By the aid of electricity we have increased the average speed of the cars in Boston from six miles per hour to eight miles per hour and were all the cars equipped electrically this increase alone would make an annual saving to the passengers of 4,152,000 hours or about 474 years. Think of this as one year's saving in one city resulting from the use of electricity as a motive-power for street cars. As a matter of fact the gain in speed will be greater when all the cars are equipped, as the average is now kept down by the horse cars holding back the electric cars running on the same tracks.

The increased speed should not be lost sight of in comparing the cost of operating electric with the cost of operating horse cars. A comparison on the basis of car days is not a just one. The comparison should be made on the basis of car miles. On the Watervliet road the daily mileage per car has been nearly doubled by the use of electricity.

Another economical feature of the use of electricity is the ability to haul one or even two tow cars. We can double or even treble our carrying capacity in case of emergency; and the extra plant kept for such purposes is in the cheapest form, representing a comparatively small invested capital, and subject to but little deterioration. Compare this with the cost of keeping extra horses sufficient to double or treble our carrying capacity. The difference is enormous.

On those roads or lines where the traffic is great and constant, we will have larger cars. By using the radial truck or double trucks, we can handle 30-foot cars as easily as our present standard form, and do away with the annoying and destructive teetering inseparable from a long car mounted on a 6-foot truck. We can nearly double the seating capacity, and still use but one conductor and one driver.

From the foregoing it is evident that electricity admits of many economical changes, and that in many ways we may hope to reduce expenses by its use, at the same time giving better service. What we must look to, of course, is the ultimate commercial result. Whatever may be said pro and con, the commercial result must be the final criterion. We are now receiving some light in this direction from the annual reports of the roads in those States where the statutes require such reports. Such statistics are of great value, for whatever difference may exist as to classification and arrangement, the total expenses and the total receipts are bound to appear in some form or other. From the reports of the Railroad Commissioners of New York and Massachusetts for the year 1889, we extract the following:

EXPENSES OF STREET RAILWAYS, NEW YORK STATE, 1889

Horse Roads.—Average proportion of receipts to operating expenses, 33 roads, 79.39 per cent.

Electric Roads.—Average proportion of receipts to operating expenses, two roads, 53.50 per cent.

EXPENSES OF STREET RAILWAYS, MASSACHUSETTS, 1889.

Horse Roads.—Average proportion of receipts to operating expenses, 30 roads, 82.87 per cent.

Electric Roads.—Average proportion of receipts to operating expenses, two roads, 55.50 per cent.

In 1888, the gross earnings and operating expenses of surface and elevated roads in three States were as follows:

Receipts and Expenses per Passenger, 1888.

	Gross earnings.	Operating expenses.	Net earnings.
	Cts.	Cts.	Cts.
Elevated Roads.—N. Y. State	5.01	2.81	2.20
Surface Roads.—New York State	4.94	4.02	.92
Third Ward Electric Railway.—Syracuse (1889)	4.92	2.78	2.14
Surface Roads.—Pennsylvania	5.59	3.18	2.41
Surface Roads.—Massachusetts	5.10	4.28	.82
Boston and Revere Electric Railway (1889)	4.70	2.71	1.99

The column of operating expenses contains some very significant figures.

Such figures are more convincing than any labored argument. In time, as we have more of these reports, the sceptical will become convinced and the doubting will be satisfied.

DURABILITY.

We may recognize the present economy of electrical power; but, we ask, will the apparatus last? Is it durable? Will it not wear out in one year, two years or three years?

It is difficult satisfactorily to answer such questions. A Van Depoele road was put in operation at Lima, Ohio, July 4, 1887. So far the apparatus has shown no signs of wearing out. The Eckington and Soldiers' Home Railway, in Washington, was started October 17, 1888. Senators and representatives still say it is the finest street railway in this country. The Omaha and Council Bluffs Railway was opened to traffic in October, 1888, with ten cars (20 motors). I am informed that of these original motors not a single armature or field has been lost, with the exception of a few struck by lightning before being properly wired for the lightning arresters.

There are certain parts which we expect to wear out; the gears, the shells in the bearings, the trolley wheels, and so forth; but these are provided for. The iron frame of the motor has no wear, and should last indefinitely, unless accidentally broken. The fields and armature are not subjected to wear, and should last indefinitely, unless burned or injured by accident. The electrical part of the apparatus is all right; the wear is mainly on the mechanical parts. It is the mechanical rather than the electrical engineer that we look to now for improvements. When it is generally recognized that we have to a great extent, eliminated the electrical difficulties and reduced the problem to one of mechanics, the street railway companies will be ready to push forward with full confidence.

RELIABILITY.

That some difficulties are encountered in the operation of electric cars cannot be disputed. Even though these difficulties, these mishaps, these accidents, be slight, if they interfere materially with the regular operation of the cars, if they cause breaks in the schedule, then they are matters for serious consideration, and perhaps for more serious consideration than the actual cost of repairs involved. The public are exacting in this respect, and will not tolerate delays and unreliable service. It is difficult to secure data in reference to lost trips on roads which are operated independently of the electric companies. On the West End Road, in Boston, during the months of June, July, August and September, of last year, 33,665 round car trips were made, covering a total mileage of 364,754 miles. Not a single trip was lost. This is certainly a satisfactory record as to reliability. Similar results have been obtained on many other roads, but the West End is, perhaps, one of the most difficult of all the roads to operate electrically.

On a purely electric road, if a car breaks down from any cause, the next car pushes it home and the delay is slight. I saw one day in Boston a string of horse cars blocked by the cutting of a ditch across the street. Each car as it came up had the horses removed and driven around, while the car was pushed across by hand. This entailed much delay, and five cars were soon collected in line. Then an electric car came along, the horses were all removed, and the electric car pushed the five cars across at once. Here was an unexpected example of how time may be saved by electricity.

The success of the electric cars in snowstorms is remarkable. It is really astonishing to see the cars running through 12 inches of snow with no apparent difficulty, frequently pushing or pulling other cars, while four steaming horses are hardly able to pull one car. The contrast is great, and many who were doubtful about the ultimate value of electricity last fall are most enthusiastic advocates now. Such work requires extra power and the station must be able to meet the demand.

During the recent blizzard in St. Paul, one of the criticisms on the electric road was, that the drivers lost their heads and cut down the schedule time of the round trip from 45 minutes to 35 minutes—certainly not a cause for serious complaint. In St. Louis, in Wichita, in Kansas City, in Scranton, in Syracuse, and elsewhere, the electric cars have this winter demonstrated their decided superiority over horse cars, and have shown their ability to run through 10 or 12 inches of snow without requiring the tracks to be cleaned. The electric sweepers in Boston are a pronounced success, and the press, the public and the railway officials are unanimous in their praise. We feel confident now that electric cars can run when horse cars cannot, and that it will require such an unusual storm as stalls the steam roads to block electric cars.

To insure reliability, the entire system should be constructed and installed in a first-class manner; duplicate or reserve steam and generator capacity should be provided; extra motor cars should be held in reserve, the proportion depending upon the nature of the service required; and extra parts should be kept on hand, so that an accident can be repaired in the shortest possible time. We should realize that to a certain extent the motors take the place of horses. A motor may fall sick occasionally, and the services of an electrical doctor should always be available.

FIRST COST.

If electricity does all that is claimed for it, then it is a necessity in street railway work. If the railway President investigates and finds that the claims are well supported, that electricity is safe, is economical, is durable and is reliable, then he seeks to know the cost. A really good article is expensive. Electric motors are good articles.

The cost of equipment for a first-class, double-track road, including iron poles (side suspension), fifty-six pound girder rail, one sixteen-foot closed car and one open tow car to each mile of track, suitable generator and steam plant capacity, &c., would be approximately as follows:

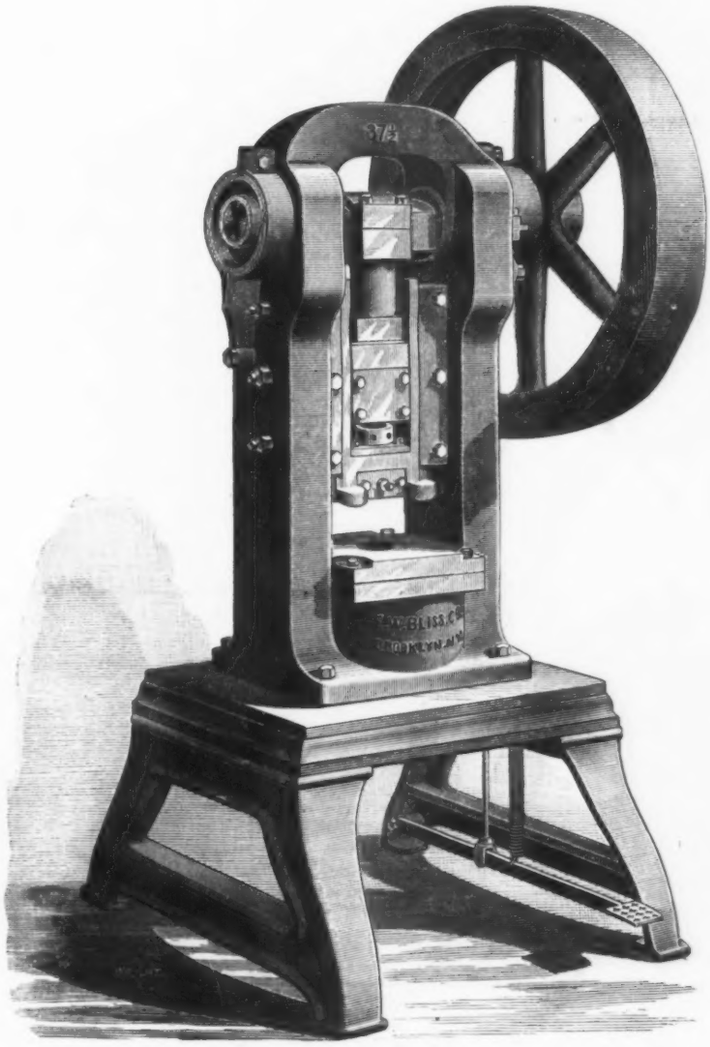
PER MILE OF TRACK.

One mile of track (paved street).....	$10,000
One motor and one open tow car, generator and station equipments, line construction, including poles and steam plant.....	10,000
Total.....	$20,000

A double-track road ten miles long would cost on this basis $400,000, including 20 motor cars and 20 tow cars.

On a road with very bad grades, greater power might be required. If wooden poles be used, the cost of the line would be very materially reduced.

And now a few words as to the future of electric railways. The success of electrical propulsion has been established beyond question. It is only a matter of time, and that a short time, when it will replace the horses on the majority of our street railways. It is only a matter of time, a somewhat longer time, perhaps, when it will be the propelling power on all our elevated roads, for the elevated roads possess ideal conditions for the application of electricity. It is within the bounds of possibility that our steam roads will be run with electricity; certainly this power offers many advantages for the suburban traffic in the vicinity of large cities. The possible utilization of hitherto neglected water-powers will be one of the factors in determing the extension of electrical propulsion in this direction. Already we see the beginning. The West End Company, of Boston, are building longer cars with radial and double-swivelled trucks. The New York elevated roads are anxiously seeking a solution to the problem of how to enlarge their carrying capacity without rebuilding or materially altering their superstructures. Longer trains are requisite to meet the increased demands. The limit of the capacity of the present locomotives has been reached. Increased weight in the locomotive means are immense expenditure for strengthening or practically rebuilding the roadway. Cables are not feasible, as the strain on the grip would not permit of long trains and it would be difficult to combine speed and safety with any considerable increase in the number of trains. Cables would not permit of satisfactory switching arrangements at the termini and elsewhere. Electricity offers the best solution. Equip each car with motors. Flexible electrical connections can easily be made from car to car as is now done on surface roads to light the tow cars, and the whole train controlled by the driver on the front platform of the leading car. Electric, vacuum or air brakes can be used in the same way. It matters not how many cars we have in a train—one or fifty, each car adds its own power and all work together. There is no dead weight to pull, as in the case of the locomotive. The passengers themselves furnish the weight for traction. The switching arrangements present no difficulties whatever. The motors can be reversed and run equally well in either direction. The train can be controlled from either end and any increase or decrease in the number of cars will not affect the controlling mechanism. It is difficult to conceive of a more flexible system. It seems to be the ideal system for the elevated roads and is bound to be adopted in the near future.



NEW SINGLE-ACTION PRESS.

New Single-Action Press.

Manufacturers of locks, hardware, electrical goods and heavy brass and ironwork of every description will be interested in the engraving which we here present of the new No. 37½ single-action press, recently put on the market by the E. W. Bliss Company, of Brooklyn, N. Y. It was first used for cutting button-hole attachments for sewing machines, out of cast steel, some of the pieces being about 5 inches diameter by $\frac{5}{32}$ inch thick, requiring a very strong yet compact machine. For such cutting the machine is geared, a back shaft being provided with heavy fly-wheel, tight and loose driving pulleys, and a pinion meshing into a 60-inch spur gear on the main shaft. The latter is a heavy steel forging with long journals, and receives its motion through a very powerful automatic clutch, which may be locked to the shaft at any one of four points in the hub of wheel or spur gear, where steel locking pieces are inserted. The slide is known as the "Meaker" patent mandrel, which is built especially for heavy work, and yet admits of an adjustment of 1½ inches in hight, the adjusting screw being 2¼-inch diameter of forged steel. The lower end of the pitman is turned to a segment of a circle and rests in a recess in the top of the slide, bored to the same circle, the pressure from the crank being thus carried through a practically solid mass of metal to the face of the slide. A forged steel cap is fitted at the lower end of the slide to secure the shank of punches, but when the nature of the work requires it a flange may be cast on the lower end of the slide to give support to large punches, or shearing knives, as the case may be. The frame of the press is the familiar arch pattern, which gives greater strength for the same weight of metal than any other form. A section of the upright portion of frame measures 5½ x 10 inches, while the bed portion of same is 12 inches thick, giving ample strength for any cutting, forming or embossing for which such a press can be properly used. The total weight of the machine, geared, is about 7000 pounds.

A new freight line, known as the Reading and Boston and Maine Dispatch, has gone into operation over the Reading and Pennsylvania, Poughkeepsie and Boston Railroads. The time of freight between Philadelphia and Boston is reduced to 30 hours. Heretofore it has required from three to seven days to get freight through. The working arrangements have been made via this route from all stations on the Lehigh Valley Railroad, Reading Railroad, Wilmington and Northern Railroad, Beech Creek Railroad, New York, Susquehanna and Western Railroad, to all stations east

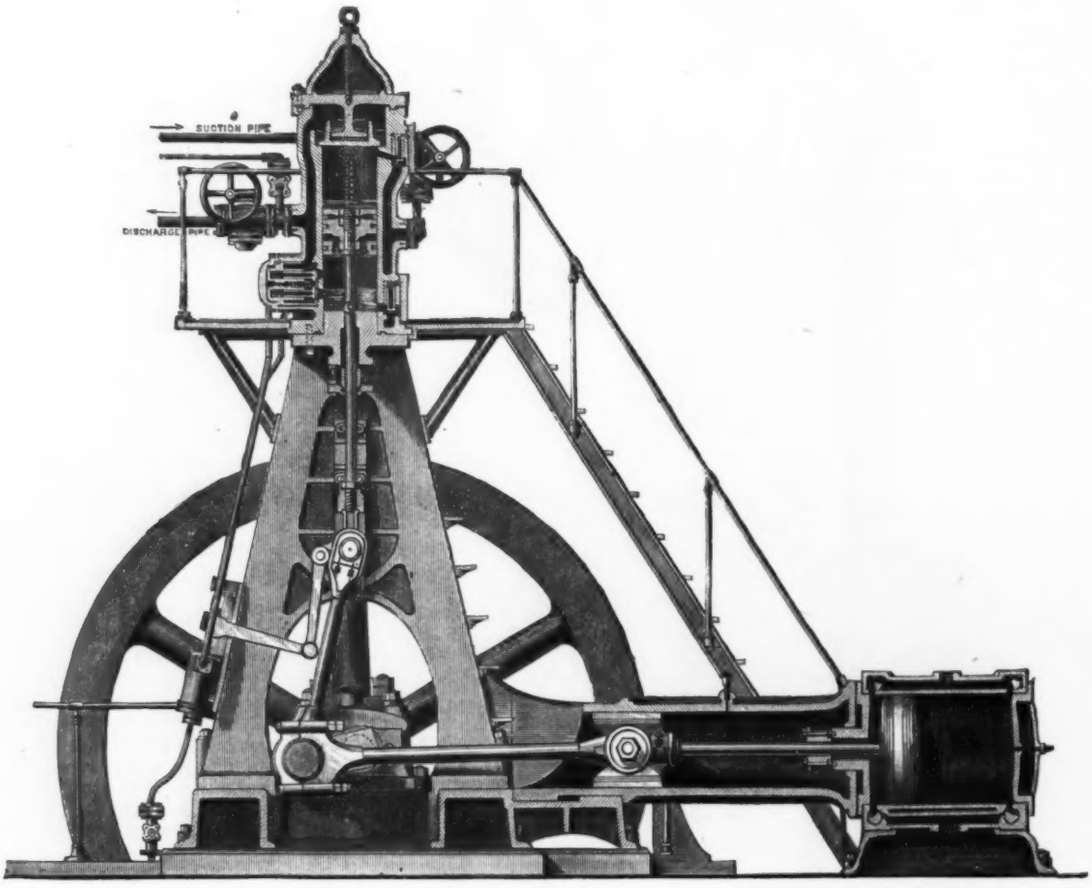
on the Boston and Maine Railroad, Central Massachusetts Railroad and Central New England and Western Railroad.

Machinery for Refrigeration and Ice-Making.

The general failure of the ice crop last winter has brought prominently before the public the question of artificial cooling and freezing as the only means by which the scarcity of ice during the coming summer may be in some way compensated for. For many years much careful study and extended experimentation have been devoted to this subject, in the hope that where large quantities of ice were needed, and also where large spaces were to be cooled, these results might be attained at a cost which would compare favorably with that of natural ice, and which would do away with the many nuisances accompanying the use of water. The many appliances devised from that first brought forward in 1550 by Blasius Villafranca, who produced an artificial reduction of temperature by dissolving saltpetre in water, up to the well-known mixture of ice and water now used the world over in the manufacture of ice cream, many machines have been devised, founded upon different principles, but all aiming to accomplish like results. At the present time it is not our intention to review its history, but to confine ourselves more particularly to the mechanical production of cold.

In the mechanical system some heat absorbing agent, such as ammonia, ether, sulphurous oxide, &c., is charged into a machine and afterward passed through the round of three operations, the first being compression. In this first step the gas is compressed to a pressure varying in the case of ammonia from 125 to 175 pounds per square inch, and depending upon the temperature of the condensed water used in order to prepare it for the second operation. During this compression the heat developed is in proportion to the amount of pressure exerted upon the gas, and in a certain sense it may be said to be squeezed out of the gas, from which it is conveyed away by the condensing water The heat developed is withdrawn by forcing the gas through coils of pipes which are in contact with water to which the heat is transferred. When this point is reached the gas assumes a liquid condition, and in so doing gives additional heat to the surrounding water. The third operation is the production of cold by the expansion of this compressed gas, which deprives the substance to be cooled, such as air, water, brine, &c., of its heat. The pressure in the interior of the coils used for this purpose is maintained at a lower point than that required for maintaining the gas in the liquid state. The liquefied gas upon entering these coils re-expands, extracts the heat from the substances surrounding the pipes, the quantity of heat thus extracted being the same as was generated by the first condensation of the gas. The gas having performed this last operation in its refrigerating work, is ready to go over the same cycle of operations. This is the general method, modified more or less by different inventors, in which the gas is by pressure mechanically compressed, then cooled to the liquid state, and then permitted to expand.

It is evident from the above that the machine to accomplish this work must be divided into three general parts: First, a compression side, in which the gas is either mechanically or otherwise compressed; second, a condensing side, generally consisting of coils of pipe, in which the compressed air circulates, parts with its heat and liquefies; and, third, an expansion side, also consisting of coils of pipe, in which the gas re-expands and performs the refrigerating work. The gas is drawn through the expansion coils by the pumps at a pressure varying from 10 to 30 pounds above that of the atmosphere, when ammonia is used, and is then forced into the condensers, where a pressure of 125 to 175 pounds usually exists, and then to the expansion side, which is arranged somewhat in a similar manner to that of the first condenser side. The liquefied gas enters the expansion coils through a minute opening, when it is instantly released from a pressure of 125 to 175 pounds, the amount needed to maintain it in a liquid condition, the consequence being that it begins to boil, and in so doing passes into the gaseous state. To do this it must have heat, which can only be supplied from the substances surrounding the pipes. As a natural result the temperature of these substances is reduced, the quantity of heat taken up by the gas being the same as that which was expelled from it during its liquidation. If the expansion coils are placed in an insulated room that room will be cooled, and also if brine or any other liquid be brought in contact with the surfaces of the coils its temperature will also be reduced. To carry it a little further, if the brine so reduced or lowered in temperature be led through suitable pipes to a room the air in that room can be correspondingly cooled. The same gas is used over and over again, since it works in a closed cycle.

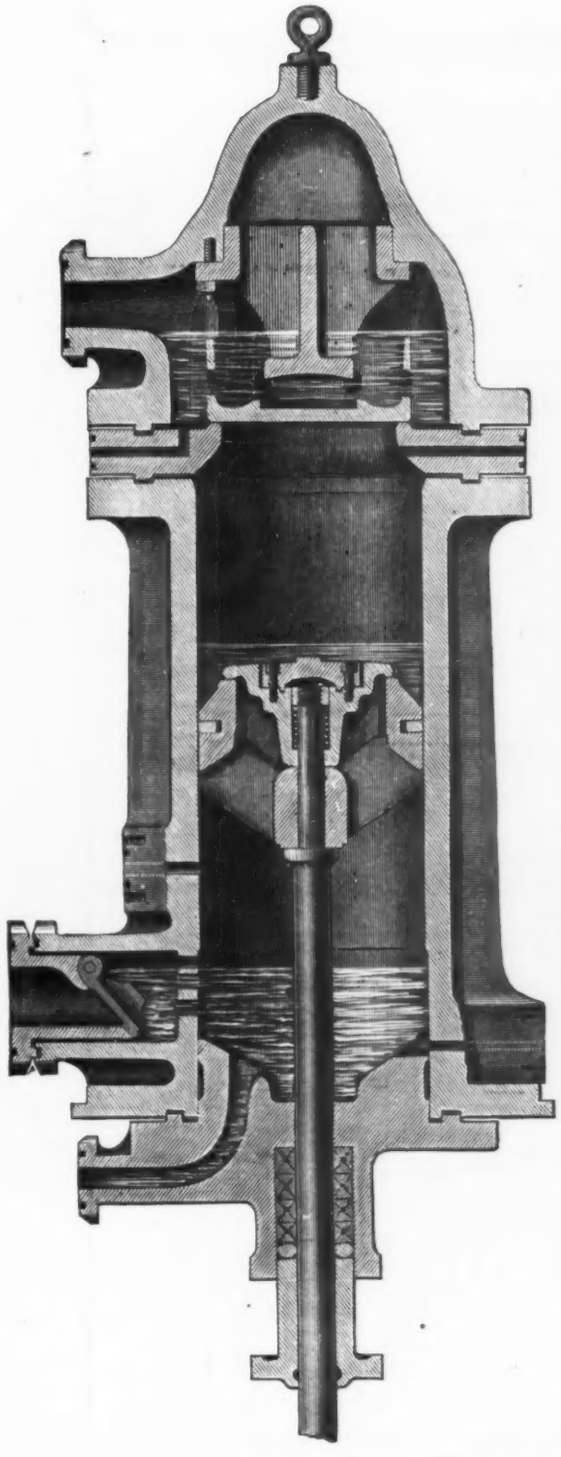


SECTIONAL VIEW OF DOUBLE-ACTING ICE-MAKING MACHINE.

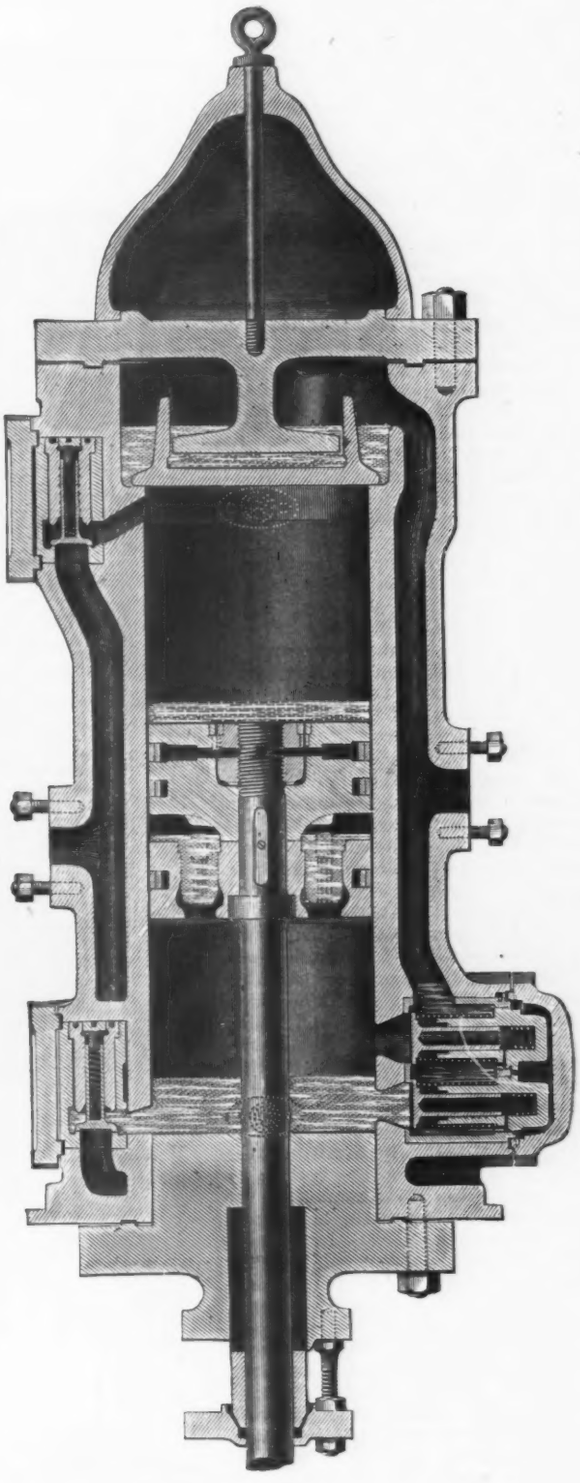
REFRIGERATION.

Through the courtesy of the De La Vergne Refrigerator Machine Company, of New York, we are permitted to present the accompanying engravings, which show the principal features of their refrigerating and ice-making apparatus, a description

of which is obtained from their admirably written catalogue, just from the press. The first view represents in section and elevation the double acting machine. It is apparent that a double acting pump is more advantageous than a single acting one, for the simple reason that it handles double the amount of gas with every revolution of the crank-shaft, the moving parts being the same in both cases. Further than this, the friction is the same for all these parts, while double the work is performed. This increase of capacity, with the loss of the same amount in friction, cheapens both the operation and construction of the machine.



SINGLE-ACTING COMPRESSOR.



DOUBLE-ACTING COMPRESSOR.

THE COMPRESSOR.

In the single acting compressor the gas enters the pump through a large opening near the bottom on the up stroke of the piston. On the return stroke the valve in the inlet closes, while the gas in the cylinder passes to the upper side of the piston through a valve in the piston, compression taking place in the upper part of the cylinder. The lubricant for cooling the pump and sealing its valves and piston rod is injected through a small aperture at the bottom of the pump during the return stroke of the piston, so that the cylinder is fully charged with gas before the introduction of the lubricant, which therefore does not occupy any space to the exclusion of gas. The descending piston becomes submerged in the lubricant collected in the bottom of the cylinder, and a small quantity of it passes through the open valve to the other side of the piston, thereby effectually sealing the piston and preventing a slippage of the gas past it during the upward or compressing stroke. A sufficient quantity of lubricant is introduced to the upper side of the piston to enable it to drive out all the gas, and with it a portion of the lubricant which passes through a diaphragm valve which it seals upon the return stroke of the piston. Providing an efficient oil circulation proved a serious drawback in designing a double acting compressor. By referring to the engraving it will be seen that there are two discharge valves placed at the lower end of the compressor one above the other. On the down stroke either or both of the valves may open until the piston covers the upper one, when only the lower one is left open to the condenser. As soon

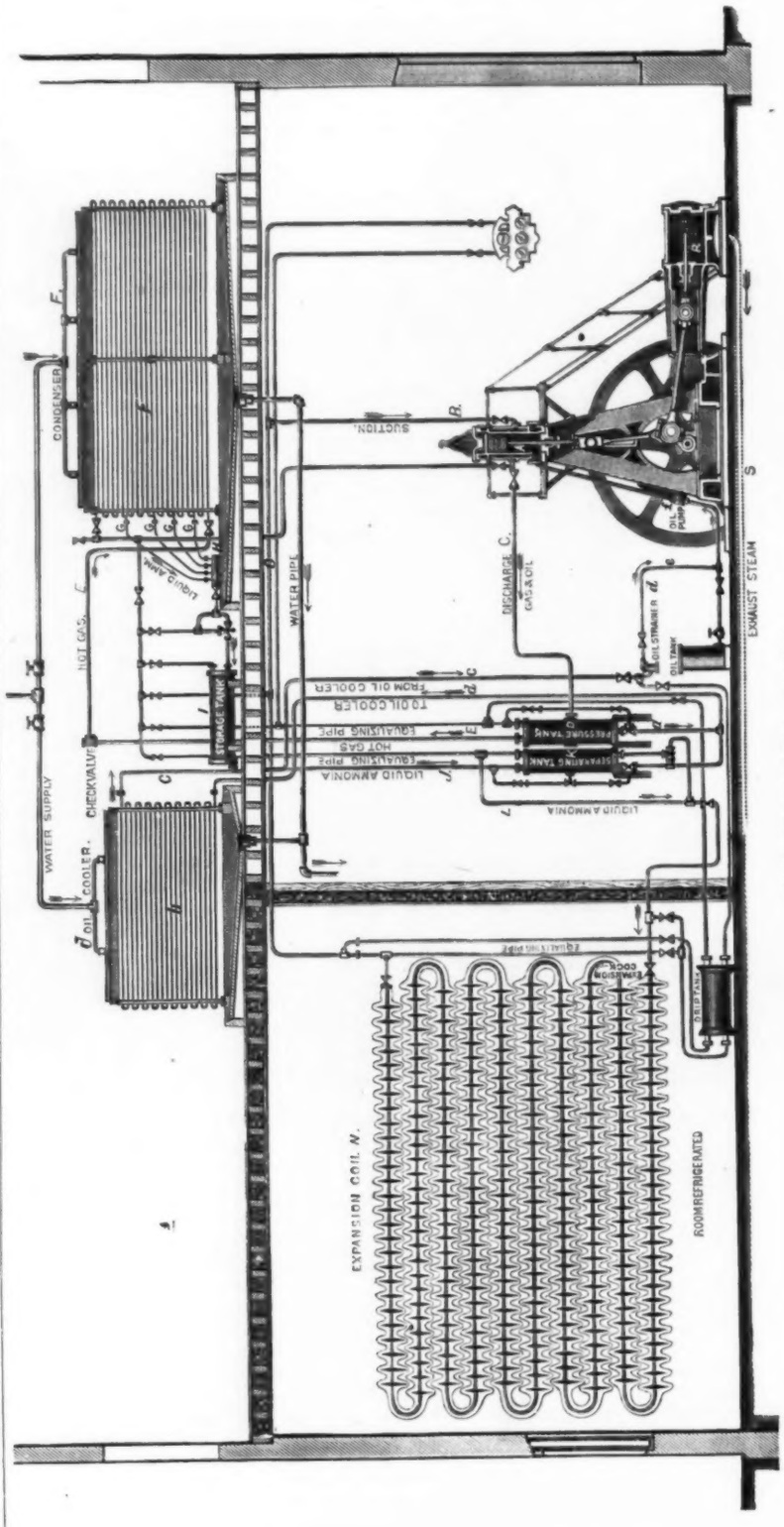
as the lower one is closed by the further movement of the piston, the upper one is in communication with an annular chamber formed in the piston. This chamber has valves in its bottom, which open into it as soon as all other outlets from the lower side of the piston are closed, when the gas will all go out through the piston, and after the gas the oil will follow, thus permitting no gas to remain on the lower side after the completion of the down stroke. From this it will be seen that the oil system so desirable in the single acting compressor is retained in this one, and that the lower side of the pump works as well as the upper, while the oil effectually seals the stuffing boxes, in spite of the higher pressure upon it at the end of the down stroke. This in general is the construction of one of the most important parts of the machine.

THE CONDENSER.

From the compressor the gas passes to a condenser, these two portions of the machine being of the same construction no matter for what use the liquefied gas may be intended. We may state, in parenthesis, that the oil passing out from the compressor is led to an oil cooler, through which it passes, and where it is cooled by showering water, and then is reintroduced into the compressing pumps, as described above. The condenser forming a part of this system consists in a modified form of a coil placed vertically, with a gutter at the top of the supporting frame, from which the water is delivered in fine streams or showered upon the upper pipe, and as it trickles downward from pipe to pipe its temperature is increased by its absorption of heat from the liquefying gas. Both of the general views show the arrangement of the condenser in relation to the other parts of the plant. At each end of the condensers is a series of small pipes, called the liquid pipes, which for each condenser are united into one short pipe of larger diameter, called the liquid header. The liquid pipes serve to carry away the condensed ammonia from separate sections of the condensing coil, so as to keep the latter dry and to utilize to the fullest extent its surface for the purpose of abstracting heat from the gas. By reason of the thin stratum of water passing over the pipes, and it being kept in a constant rolling motion by the velocity of the flow and its direct contact with the pipes, the harmful effects resulting from the formation of surface film which adheres so tenaciously to the pipes in submerged condensers is obviated. By admitting the warm compressed gas at the bottom instead of at the top of the condenser, the warmest gas is first exposed to the warmest water. As the gas ascends in the condenser it constantly meets colder water until its temperature is almost reduced to the temperature of the water where it first comes in contact with the condenser. The water in its passage downward over the condenser meets warmer gas at each step, and is thereby increased in temperature until it finally leaves the condenser at the bottom charged with more heat than the same quantity would otherwise be capable of extracting. In consequence of the gradual extraction of heat the difference between the initial and final temperatures of the water is greater than can be obtained in any other form of condenser; and as more heat is extracted for an equal quantity of water used, less water is required. The loss attending spattering is prevented by attaching fins or strips of metal to the under sides of the pipes which lead and guide the water in its descent. The intermediate or liquid pipes above referred to, which connect with the main pipes of the condenser, serve to carry off the liquefied gas as fast as it forms, thereby preventing its descent into the lower and warm pipes of the coils and its consequent reexpansion, which would materially increase the pressure. The third operation brings us to the

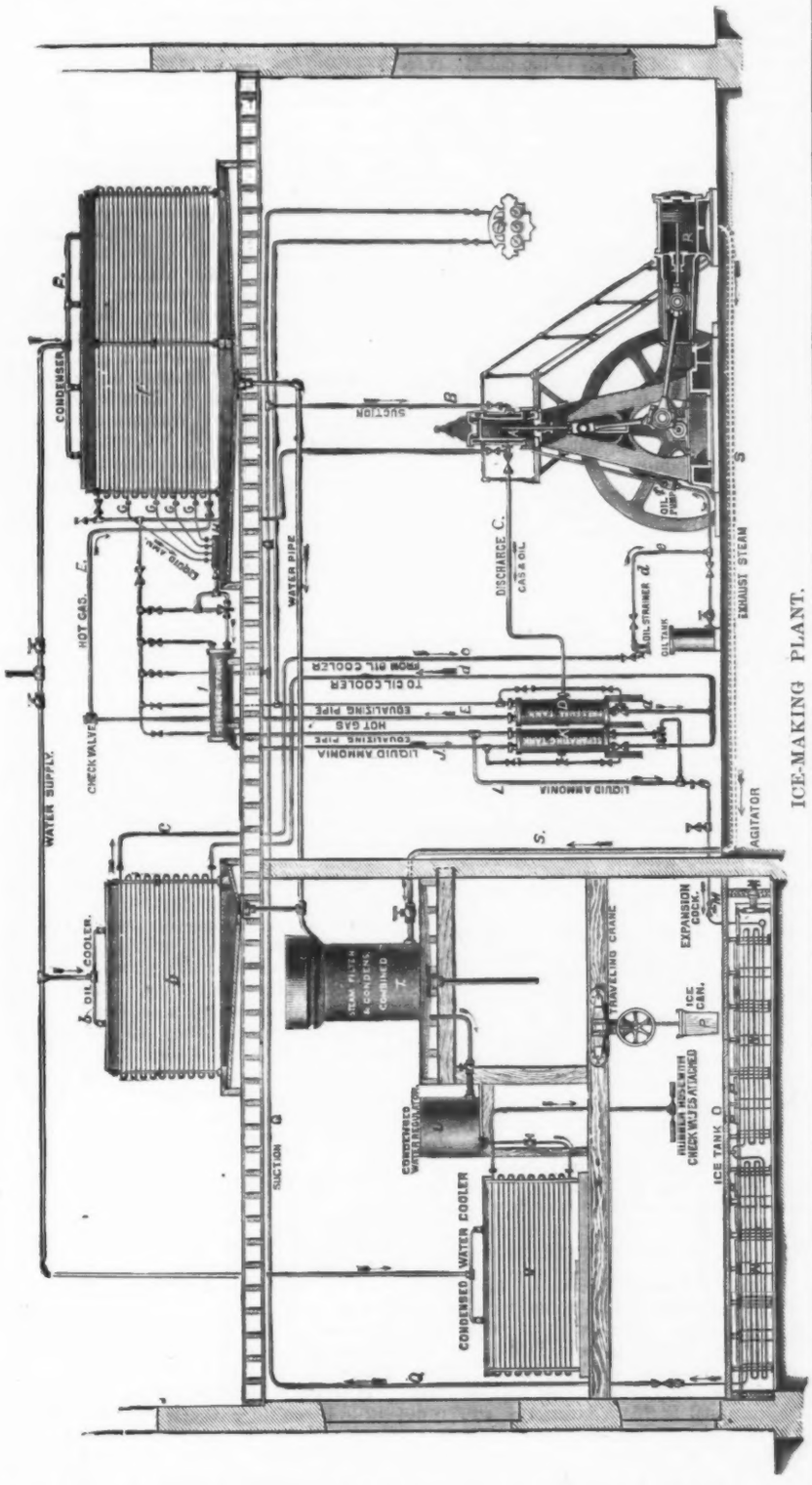
EXPANSION COILS.

It is always the endeavor in this method, wherever practicable, to refrigerate rooms by expanding the gas direct through pipes placed in the rooms to be cooled, and not by first cooling a non-congealable salt brine, and pumping this through pipes in the room. The reason for this is simply that at each step introduced there is a loss of efficiency, and when the liquefied gas is permitted to cool brine during its expansion, and this brine is afterward forced through pumps, there is not only a loss due to the extra expense attending the operation of this pump, but there is also a loss in final temperature attained, this being due to the absolute impossibility of abstracting from the brine the same amount of heat contained in the gas. Further than this is the loss resulting by the absorption of heat in the transmitting part of the apparatus. The objection raised against the pipes containing ammonia going directly into the room to be cooled is the danger of leakage, which, it is claimed, has been completely overcome by a perfect system of connections and cocks, and by the true manner of constructing these. It was the custom formerly to use pipes only to obtain the necessary cooling surfaces in the rooms to be refrigerated; but as will be observed in the engraving showing the expansion coil, this surface is increased, and at the same time the length of pipe necessary is decreased by the employment of cast iron



REFRIGERATING PLANT.

disks, which are made in two parts and attached to the expansion coils after they have been put up by means of iron clips. These are of such efficiency as to do away with 4 feet of 2 inch pipes, the usual size, since 1 foot of pipe provided with these disks is equal in its cooling effect to 4 feet of plain pipe. This result is due to the fact that heat is conducted more rapidly by iron than by air, and therefore the greater the surface exposed the more efficient will be the plan, whether it be intended for heating or cooling. In addition this permits a large refrigerating surface without in any way increasing the internal surface which is in contact with the liquefied ammonia. When considered desirable the brine circulating system is introduced, which consists simply in cooling any saline solution which is then circulated by means of a pump either through closed pipes or open troughs through the rooms to be cooled. The usual method is to include the brine in a large tank provided with vertical coils, in which the chilled liquefied ammonia circulates, vaporizes and returns as a gas to the compressor. The brine, deprived of a portion of its heat, is drawn away by the circulating pumps and forced through the gutters or pipes suspended in the rooms to be cooled. The air in the room is deprived of its heat by the passing brine, which on its return enters the top of the tank and again goes through the same operation. We now come to that part of the plant in which the general public is more decidedly interested in than in the one just described devoted to refrigeration, namely, that of



ICE-MAKING PLANT.

ICE MAKING.

This plant in its first two features is exactly similar to the one just described, the only variation being in the third feature, where the arrangement of the expansion pipes is decidedly different. One great difficulty which the early investigators of this subject encountered was the making of clear, transparent ice, since owing to the presence of air found in all water this could not be accomplished. As soon as water begins to freeze it eliminates the air in the shape of minute bubbles, and if the process of freezing is rapid these bubbles are trapped in the ice, which is thereby rendered opaque. While this fault does not in any way effect the purity of the ice its appearance makes it unsalable and it melts considerably faster than the clear, transparent article. If the freezing takes place at a temperature above 24° the ice is perfectly clear on the outside, but the center of the block thus frozen contains a large porous core, in which nearly all the air of the water which it held before freezing accumulates. Many attempts have been made to obviate this fault, but on the whole it may be stated that the progress cannot be compared to that which has attended the improvements in the gas compressing and evaporating process, and much remains to be done in this line. In the applications of the machine for making ice we find two main systems; one using brine for the purpose of freezing the water, the other accomplishing the same results by direct expansion the same as in refrigerating plants. It is clear that the latter method avoids much superfluous apparatus, and is more economical than the former; and consequently inventors have endeavored to do away with brine in ice making, but have found greater obstacles than were encountered in the refrigeration of rooms. The first drawback met in the attempt to solidify water is the necessity of straight surfaces. While a wrought iron pipe of medium diameter is the safest and cheapest method of confining ammoniacal gas, it is apparent that if ice is formed around such pipes it becomes a troublesome and wasteful operation to remove it. Straight surfaces are difficult to construct and to keep tight. Other attempts have been made to freeze water by following nature's plan to produce a temperature below the freezing point in well-insulated rooms, but here the low specific heat of air and its low degree of conductibility proved such great obstacles that the results were extremely discouraging. Attempts have also been made to freeze water in vacuo, but without much success.

In the application of the system of making ice by the use of brine there are three different processes which are now more or less well known, and each of which has attained some degree of success: First, the system of removable cans; second, the plate system, and third, the system of stationary cells. The first is the one in more general use. In an iron or wooden tank, well insulated, a salt brine is kept at a temperature considerably below the freezing point of water by evaporating coils, which are connected to the gas pump. In the brine galvanized iron cans are immersed. These contain the water to be frozen, and it is evident that in the course of time a coating of ice will form on the bottom and on the sides of the cans, and that after sufficient time has elapsed, a solid block of ice will be produced in each can. One can after another is now lifted out of the brine, or freezing tank, sprinkled with warm water in order to loosen the block of ice from the metal, when the block is slipped out, the can replaced with fresh water, and again placed in position in the tank. Thus a continuous process is established which permits of a regular output throughout the day and night.

In the plate system, which, as a rule, produces ice in pieces weighing one or more tons, a hollow plate of boiler iron is formed and immersed in a tank containing fresh water to be frozen. This plate is filled with brine, which is kept below

the freezing point by evaporating coils in a manner similar to those of the can system. By thus keeping the plate at a sufficiently low temperature, ice will form on both sides of it, and after a time two layers of ice will be built upon the two sides of the plate. In order to remove this ice the cold brine is drawn from the plates, and tepid brine is supplied. After a short time the ice is loosened from the plates, when it is hoisted out of the tanks and put into blocks of any desired size. In order to make this process continuous more than one tank must be supplied, so that one at least is in continuous operation.

In the system using stationary cells the cold brine is pumped through the hollow walls of the cells, the latter being open at the top and filled nearly brimful with the fresh water to be frozen. Ice forms in the cells the same as in the can system, but after the blocks are finished tepid brine is pumped in in place of the cold brine, and thereby the ice loosened from the cells when its removal is a matter of no difficulty. In this system a whole tank has to be emptied at a time, as in the plate system, and to make the tank continuous in its operation more than one plant has to be employed.

Concerning the making of clear ice, it was soon discovered that by agitating the water during the process of freezing this could be accomplished. A metal bar was let into the can and lifted up and down by a small revolving shaft and thumb, or a crank or a wooden paddle was inserted into the can and moved to and fro by some kind of mechanism, or a small perforated pipe was introduced into the can within a few inches from the bottom and a current of cold air forced through the pipe, thereby producing a circulation of the water in the can. All of these arrangements had the disadvantage that at the end of the operation the paddle or pipe had to be removed to prevent its being frozen into the block. Another proposition was to rock the can in the tank. None of these devices found favor in practical use The plate system and the shallow stationary cells alone avoided the agitation of the water and yet produced clear ice; but as the freezing took place only from one side the process was slow and the plants were necessarily large and expensive.

Another mode of making transparent ice is to deprive the water of its air before going into the can. This is done either by long continued boiling, or by exposing the water to a high vacuum, or by distillation. This system has been found to work extremely well, and is now the one most in use. In order to economize in fuel it has been found necessary to use the exhaust steam from the engine for the purpose of ice making, and the steam therefore had to be deprived of the oil used in lubricating. This was accomplished by filters of very simple construction. After condensation of the steam thus filtered, the condensed water is again filtered in order to entirely deodorize it. As a result, can ice produced in this manner is as good as ice can be made. It contains but a thin stratum of porous ice in the center, due to reabsorption of air in the can during freezing, but it is decidedly better and purer and more durable than any natural ice. The engraving of the De La Vergne ice making plant gives clearly the arrangement of all the parts, and as the pipes are all named, the course of the gas from the engine through the condenser, evaporator, ice tank, and back to the engine, can be easily followed. The air is drawn into the double acting compressor A from the evaporating coils through the suction pipe B. By the action of the compressor the gas is discharged through the pipe C into the pressure tank D, when the oil, which we will follow later on, is dropped to the bottom. The upper half of this tank is provided with cast iron baffle plates, which serve to more completely retain the oil and lodge it in the bottom. From the tank the gas, still hot by its compression, is sent through the pipe E into the bottom pipe of the condenser F, where, by the action of cold water running over the pipes, the hot gas is first cooled and then liquefied. The pipes G conduct the liquid ammonia through the liquid header H into the storage tank I, from whence it runs through the pipe J into the bottom of the separating tank K. The small pipe L carries the liquid ammonia to the expansion cock M, through which it is injected into the evaporating coils N placed in the freezing tank O, which contains salt brine which is cooled to a temperature of 17° or 18°.

Of the coils N there are a number side by side, leaving space enough between them to insert the galvanized iron ice cans P, which contain the water to be frozen. After evaporating in the coils N, and thereby having taken up its quotum of heat from the brine, the ammonia gas passes through the pipes Q and B back into the compressor from which they started. This is the entire cycle through which the ammonia passes.

The oil heated with the gas by compression is dropped into the bottom of tank D. From there it passes through the pipe *a* to the lowest pipe of the oil cooler *b*, similar in construction to the condenser, and, like it, cooled by cold water showered over it. After being cooled down in the oil cooler, it passes through pipe *c*, strainer *d*, and pipe *e* into the oil pump *f*, which is so constructed that it distributes the cold oil into the compressor on either side of the piston during its compression stroke—*i. e.*, in such a manner that no oil is furnished during the suction stroke of the piston, but only during the time of compressing, thereby cooling the gas during its period of heating. The hot oil after leaving the compressor now returns again in company of the hot gas to tank D, and from there again enters on its course through the oil cooler, strainer and oil pump to the compressor.

From the brief account we have given in the foregoing, some idea may be formed of the principal methods pursued in both refrigeration and ice making. We have not dealt at all with absorption machines, having confined our description solely to that method employing mechanical compression. As the subject is one of peculiar interest, owing to the lack of ice on storage at the present time, we shall probably take it up in the future and present illustrations and descriptions showing more completely some of the other methods in use.

Morse, Williams & Co., of the Morse Elevator Works, Philadelphia, have issued the following letter to their employees: Beginning with Saturday, May 3, the working hours of our employees during May, June, July and August will be from 7 a. m. until 12:15 on Saturdays, and from 7 a. m. until 12 m., and from 12:30 until 5:15 p. m. on other days, making a total of 54 hours per week. During the balance of the year the working hours will be from 7:30 a. m. until 12 m. and from 12:30 until 5 p. m., Saturdays included, making the same total of 54 hours. The price paid per hour will be regulated so that the amount for 54 hours' work will be the same as heretofore paid for 60 hours. We trust that this unsolicited reduction of the number of working hours may prove an incentive to our employees to accomplish as much work as possible in the allotted time, that our interests may not suffer in these days of close competition in business.

VIRGINIA IRON NOTES.

Robert Steel and David Alexander are making arrangements to establish at Petersburg a large iron foundry.

Something of an iron boom has cropped out at Scottsville; large deposits of iron ore are known to exist near Carter's Bridge on Hardware River, where it is said a furnace was operated many years ago.

The contractors who are building a furnace for the Buena Vista Furnace Company, at Buena Vista, have completed the necessary grading, and have begun the foundation for the furnace. The same contractors are building a furnace at Max Meadows, and are also under contract for furnaces at Bristol and Graham.

Work has begun at Basic City on a 100-ton iron furnace. Z. T. Henry, a Pittsburgh contractor, is superintending the construction of the plant. The stock house is 75 x 200 feet; the cast house is 50 x 100 feet; the engine house 50 x 63 feet, which, together with boiler room, sheds, &c., will occupy ten acres of ground. It is claimed that iron can be made cheaper in Basic City than in Birmingham, the argument being used that the coke can be laid down at Basic City for $2.50 per ton or less. The additional point is cited that brown hematite ores cost $1.60 per ton in Alabama, while the same grade at Basic City can be bought not to exceed $1.40 or $1.50 per ton, making a difference of at least $2 in favor of the latter production. In the transportation of pig to New York Basic City is several hundred miles nearer than Birmingham. Being within 125 miles of tidewater, she can lay her iron down, it is claimed, at about $2.50 per ton.

The Bertha Zinc Company, of Pulaski City, now have 625 men on their pay rolls.

At the end of the first ten months' operations, the Pulaski Iron Company have declared 14 per cent. dividend.

Work was begun last week on a 150-ton iron furnace for the Peak Knob Iron Company, at Pulaski City.

Work on a rolling mill at the same place will begin within 30 days.

Last week a contract was signed at Basic City with the New York Hardware Mfg. Company for the removal of their entire plant to Basic City. The transfer will take place as soon as the buildings can be completed. They will be of brick, the main building being L shaped, the wings being each over 200 feet long. New and improved machinery will be adopted.

The Midway Company, of Roanoke, will shortly commence the erection of their factory for the manufacture of railroad spikes, sheet iron and other similar supplies. The cost of the plant will be about $50,000.

E. M. Nettleton has opened a hardware store at Iron Gate.

Work is steadily progressing on the new furnace at Roanoke, of the Roanoke Iron Company. McClure & Amsler, of Pittsburgh, are the contractors who have the construction in hand.

It is stated that negotiations are pending between the authorities of the town of Buena Vista and the proprietors of a western machine works for the establishment, in the former place, of a plant that will employ 400 hands and cost in the neighborhood of $200,000.

Another important development company newly organized is the Clifton Forge, Mining and Development Company. T. M. R. Talcott is the president, W. C. Moody is vice-president, G. K. Anderson is secretary and treasurer. The minimum capital stock of the company is $200,000, with the maximum limit placed at $500,000. A number of iron enterprises will be set on foot.

Still another new company, just organized, is the Valley Land and Improvemen-

Company, of Luray, where the great caves are located. The capital stock is placed at $2,000,000, and 2000 acres around Luray, including the caverns and 8000 acres of mineral lands, have been secured by the new company. The officers are: D. T. Kagey, president; G. C. Marshall, vice-president; D. E. McCorkle, secretary. The mineral properties are to be developed and the company contemplate numerous improvements.

A puddling mill is to be built at Richlands, the contract for a building 310 x 75 feet for that purpose having been awarded. This enterprise is under the auspices of the Clinch Valley Coal and Iron Company.

The Roanoke Car Coupler Factory has been organized at Roanoke by Dr. E. A. Parsons as president, J. A. Shick, vice-president; F. T. Brinkley secretary, T. W. Miller treasurer, to manufacture a newly patented car coupler.

The iron working plant already mentioned in this correspondence as locating in Danville, if a certain amount of stock was subscribed by the citizens of that place, is an Ohio company with the title of the Apto Mfg. Company. The requirements have been complied with and reorganization of the company has taken place, with F. X. Burton as president, D. A. Overby vice-president. Novelties in iron will be made a specialty.

It is stated that arrangements are being perfected looking to the establishment of an iron furnace at New Castle.

A rolling mill is said to be a new enterprise projected at Graham.

The Blackstone Milling and Mfg. Company, with a capital stock between $20,000 and $100,000, have been charted at Blackstone.

A movement is on foot at Roanoke looking to the securing of the location in that city of a plant to convert raw pig into bar steel by a new process.

The Gross Mining Company are reported to have sold their iron ore lands near Blue Ridge Springs to the recently organized Virginia Development Company.

Hot blast stoves are being erected at the White Rock Furnace near Rural Retreat by the Lobdel Car Wheel Company, who run that plant.

A vein of iron ore has been found at Bedford City near the base of the Peaks of Otter, and a mine will be opened.

Among contemplated improvements to be made in the Navy Yard at Portsmouth is the erection of a boiler and engine room in the iron and steel shop. Proposals for the work will be received by N. H. Farquhar, chief of bureau, Washington, D. C., until May 17.

Zinc mines near Coyners Springs are to be developed by a company just organized by Absalom Koiner, of Augusta County, and Harry Bingham, of New York City, and which is reported to have a capital of $25,000.

English capitalists are reported to have secured options on mineral properties in the vicinity of Lawyers, and mines will be opened.

Inducements are being held out by parties at Wytheville to an Eastern nail works for the transfer of the plant to the town mentioned.

The proposed car works at Wytheville are to have a capital stock of $500,000. It is stated that 400 acres of coal lands have already been secured, and that this amount is to be augmented by additional purchases in Tazewell County, and 4500 acres of iron and timber lands in Wythe County.

The American steamship line to Venezuela has had a German line in competition since the beginning of the year, and an English line is now added, both securing liberal subsidies from their respective Governments.

The Accident to the City of Paris.

[*With Supplementary Sheet of Engravings.*]

In our issue of April 3 we described the accident that wrecked the starboard engines (of which we presented an engraving) of the steamship City of Paris, flooded both engine rooms and completely disabled the ship. The cause of the accident was not then known, and even at the present time it is extremely doubtful if the starting point of the trouble can be determined with any degree of certainty. Our two contemporaries *Engineering* and *The Engineer* differ somewhat in their conclusions, the latter preferring to advance no decided opinion as to the cause of the accident, while the former says that the obvious primary cause of the whole mischief was the wearing away and consequent dropping of the end of the outer shafting. This deflection was some 7 or 8 inches, and the abnormal strains to which the shaft was subjected proved to be more than it could stand and it broke at the next point of support which was provided by the stern tube where the shafting emerged from the ship's skin. The engines then raced and their destruction followed. Both of the above journals are of the same opinion in regard to the total destruction of every part of the low pressure cylinder. "Nothing so complete in the way of a breakdown has ever before been seen. The explosion of a great shell might work such havoc in an ironclad. It is difficult, in the face of such total destruction, to form any theory as to what gave way first." An inspection of the accompanying engravings will show that this language is not in the least too strong. The damage was almost wholly confined to the low pressure cylinder, as the intermediate and high pressure cylinders appear to be comparatively intact. Another point upon which our London contemporaries are agreed is the excellent quality of every piece of metal entering into the construction. The hull of the vessel was uninjured, and the fact that she sustained such a tremendous blow speaks volumes for her design, material and workmanship. In the following we shall endeavor to describe the condition in which the broken parts were found after the ship had been docked.

THE BROKEN SHAFT.

It was at once seen that something was wrong with the starboard propeller shaft, which passes through the skin plating in the usual way, the outboard length being inclosed in a casing of steel plates. This casing extends up to the bracket which supports the after end of the shafting, and is attached to the ship's side for a certain distance by a web of steel. Upon this casing being removed, the whole of the outer lengths of shafting, with the propeller attached, fell to the bottom of the dock. Just outside the stern tube is a flange coupling of the usual form, by which the outboard length of shafting is attached. At the forward part of this coupling the shaft was broken square across, the diameter at the part broken being 20¼ inches. There was every indication that the metal was of excellent quality. That portion of the shaft abaft the coupling consists of one length of hollow shafting 42 feet long and one length of solid shaft 15 feet long, the latter shaft carrying the propeller.* The breaking of the shaft is accounted for in this way: The boss forming the support in which the propeller shaft revolves was fitted with the usual gun metal bush and lignum-vitæ bearing strips. The cylindrical part of the casting was split clean across the top in a line with the axis, when the forward end of the broken shaft commenced to fall, owing to losing the support of the casing, a twisting movement of considerable force was exerted, and this the casting was unable to sustain. An examination showed that the bottom part of the casting was worn through for nearly its whole length, and was much reduced in thickness where not worn through. The metal liner, 1 inch thick, together with its end flanges, was also worn through. The brass sleeve of the shaft had entirely disappeared, with the exception of two rings, presumably the end collars. This wearing away and consequent dropping of the end of the outer shafting is considered by *Engineering* to be the prime cause of the accident. What might have been the cause of this undue wear is not known positively, but it is agreed that the brass liner on the tail shaft probably burst, that the rough edge of this cut out the wood, and that the metals then came together and ground each other away, producing the state of things described.

THE WRECKED ENGINES.

The damage done the engines was confined almost entirely to the low pressure portion. The following figures may assist in fully appreciating the extent of the disaster. The low pressure cylinder, one part of which occupies a central position in the right hand engraving, weighed 45 tons, while the weight of the low pressure piston was about 10 tons, of the piston rod 3 tons, of the crosshead 2 tons, and the connecting rod 7 tons. The crank shaft weighed 14 tons. The engines are mounted on a massive steel bedplate weighing 48 tons, while the two standards supporting the low pressure cylinder weighed about 14 tons each.

The connecting rod, which is 11¼ inches in diameter, has a considerable bend in it a foot or two below the fork of the top end. The piston rod is shown still attached and lying doubled back toward the starboard side. The piston, which is of the now usual dished type, was attached to this rod by eight 3½-inch bolts. These passed through the piston and through a collar on the piston top; the bolts remained in the collar, but the piston itself had been broken away, only a very small part of it on one side remaining attached to the bolts. Beyond the collar the piston rod is continued so as to form a tail rod. This has been bent almost at right angles to the other part, and, as it lies, points aft. The low pressure cylinder itself was supplied with steam by four cylindrical valves, two on the forward and two on the after side of the cylinder. For this reason the cylinder casting was much stronger on its forward and after ends than at its sides, and when it broke up it naturally split in an athwartship direction. It broke into two main portions and fell into the position shown in our illustration. The piston was also split into two main parts, roughly speaking, and one of these pieces was found below one of the cylinder halves. The cylinder cover, which like the cylinder is of iron, was not so much damaged as the other parts, although, like all the rest of the debris, it was much battered and had a piece weighing a few hundredweights knocked off one side. The webs of the crank are much battered and scored especially on their outer ends. One dent on the edge of the forward web was 6 inches long and 3 inches across, being scooped to a depth of about 1¾ inches. The fork end of the connecting-rod with the crosshead lies on the site of the air pump, which may be said to have entirely disappeared. One of the side levers, bent and twisted in most fantastic forms, protrudes from the general mass of the wreckage. The surface condenser is of cylindrical type, unattached to the engine. It has been breached by the swinging

round of the connecting-rod, so that a large part of the side is knocked away and the tubes displaced. It was in this way that water obtained access to the ship; had there been time to close the inlet and outlet valves the water would not have risen in the compartments and the vessel would have been able to proceed under her port engines. The caps of the main bearings were split clean across. The thrust bearing was wholly destroyed. The engine housing was broken up. The two engine rooms are divided by a fore and aft bulkhead in which three holes have been made by the flying parts of the engine, thereby permitting the flooding of the port engine room.

SECONDARY CAUSES.

Regarding the secondary causes which contributed to the accident, *Engineering* says: "As we have already seen, the primary cause of the disaster was undoubtedly the wearing away of the boss of the bracket supporting the stern end of the propeller shafting, this leading to the fracture of the shafting outside the stern tube, and hence to the racing of the engines. Of course, such racing if unchecked would of itself soon induce strains on the connections of the reciprocating parts amply sufficient to cause the destruction of the machinery; but rapidly as this would occur some brief interval would intervene before the necessary speed was attained, and from the fact that in the present instance—as far as can be gathered from the evidence available—the smash occurred almost immediately on the engines starting off and before any effort could be made to shut off steam, it almost appears as if some special influence had been at work to effect at least a portion of the damage. One theory which has occurred to us, and which we consider at least worthy of some consideration, is as follows: It is well known that in the low pressure cylinders of modern marine engines there is considerable difficulty in getting the amount of cushioning desirable to insure smooth running at the speeds now common, and hence there is every inducement to increase that cushioning (chiefly by inside lap on the low pressure slide valves) to as great an extent as non-interference with a clear exhaust will permit. What the proportions were in the case of the engines of the City of Paris we do not know, but probably they agreed with usual first-class practice. Now, when the engines started to race two influences at once commenced to materially increase the compression in the low pressure cylinder. In the first place, the condenser (fitted with separate circulation engine) received a great increase in the amount of steam it had to deal with, thus probably materially reducing the vacuum, and secondly, the increased piston speed would give rise to an increase in the difference between the back pressure in the cylinder and the pressure in the condenser. These causes would thus augment the pressure in the cylinder at the commencement of compression, and instead of being, say, as ordinarily, some 4 pounds to 5 pounds per square inch absolute, it might readily rise to three times this amount or more. The effect of this would be to produce a serious pressure at the termination of the compression, and the valves on the low pressure cylinder being of the piston type, the only relief for this pressure would be through the ordinary relief valves—quite inadequate for such an emergency as this. It is very easy to conceive that such a condition of things as we have assumed might lead to the blowing off of the top cover of the low pressure cylinder and other damage, which would leave the high pressure and intermediate sections of the engine temporarily free to run as a non-condensing compound engine, thus accumulating speed which would complete the destruction. On this latter point we may observe that the strain on the connections due to the stopping and starting of the reciprocating parts would increase as the square of the speed, so that even if these connections had as large a factor of safety as nine at the normal speed of the engines this margin would have entirely disappeared by the time a threefold speed was reached."

Horace See's Opinion.

The history of this vessel, like that of the city after which she is named, has been one of surprises, beginning with her record-breaking and winding up with the accident, which since its announcement has been a subject surrounded with a great deal of mystery. The latter is being gradually cleared away by late developments, so that to-day we can venture an opinion with some degree of certainty.

The London *Engineering*, in its issue of April 18, 1890, states: "The brass sleeve of the propeller shaft had entirely disappeared with the exception of two rings, presumably the collars at the end. The propeller shaft was practically undamaged, but the metal studs which attached the sleeve to the shaft were worn down level with the shaft, and the shaft was slightly worn also. This wearing away and consequent dropping of the outer shafting we take to be the obvious primary cause of the whole mischief. Our readers will easily imagine the abnormal and altogether unprovided for stress thrown upon the shaft through its after end dropping some 7 or 8 inches, and the fracture naturally occurred exactly where one would expect, namely, adjoining the next point of support; the latter being provided by the stern tube where the shafting emerged from the ship's skin."

It is obvious that the breakage of the shaft gave the engine freedom to revolve at a highly accelerated speed. This action immediately followed without check or hindrance until the low-pressure cylinder and most of the parts connected with No. 3 crank were completely wrecked, the parts suffering most being the main housings and the main piston. It may be possible that one of the housings gave way first, also that this occurred when the piston was on the down stroke, so that the cylinder was lifted up bodily by the pressure of the steam between the piston and top cylinder head. When the bottom of the stroke was reached the piston struck the bottom head—now out of place and raised above its natural position. Then the general break-up of this engine took place.

Much comment has been made about the door between the two engine-rooms having been left open when it should have been closed. Many believe that, instead of this having been a fault, or the placing of a door at this point an evil, the contrary was the case. In fact, they believe the door being there and having been left open were providential circumstances which saved the ship from being lost—that with a close bulkhead she would have been, when the water filled the one compartment, like a ship with her cargo shifted to one side and thrown on her beam ends.

Many lessons can be learned from this disaster, one of the most important being that it is necessary to give support to the outboard shaft of the twin screw engine equal to what has been given to that of the single screw. Have we not been inviting accident in endeavoring to save the little resistance which would accompany an extra support between the outer hull bearings and that in the hanger, or a little extra weight in the shaft and outer bearing next the propeller? If an attempt were made to reduce the number of bearings inside the hull where they and the shaft can be examined at all times, it would be opposed as a move in the wrong direction, whereas a far greater risk is taken outside the vessel where the parts are hid from observation except at the infrequent periods of docking and with the outer shield plates around the shaft removed.

The makers of governors here had an opportunity of advertising their wares as the only preventive of such accidents. A good system of governing or a valve gear that would not permit the engine to race when the working load was removed would either of them be proper safeguards to be seriously considered.

The last point suggested is that in relation to the proper location of the donkey boiler and donkey pumps. The United States Treasury inspection laws, notwithstanding the many attacks made upon their incompleteness, are right in this respect. They demand that these articles, which are invaluable in an accident like the above, should not be placed below the lower deck of the vessel. This puts them where they can readily be got at and operated in case of an emergency. This and some other conveniences which are in the nature of safeguards have added something to the cost of American-built ships, but it has been returned to the owner and underwriter in cutting down losses and saving incidental delays.

NEW ENGLAND NOTES.

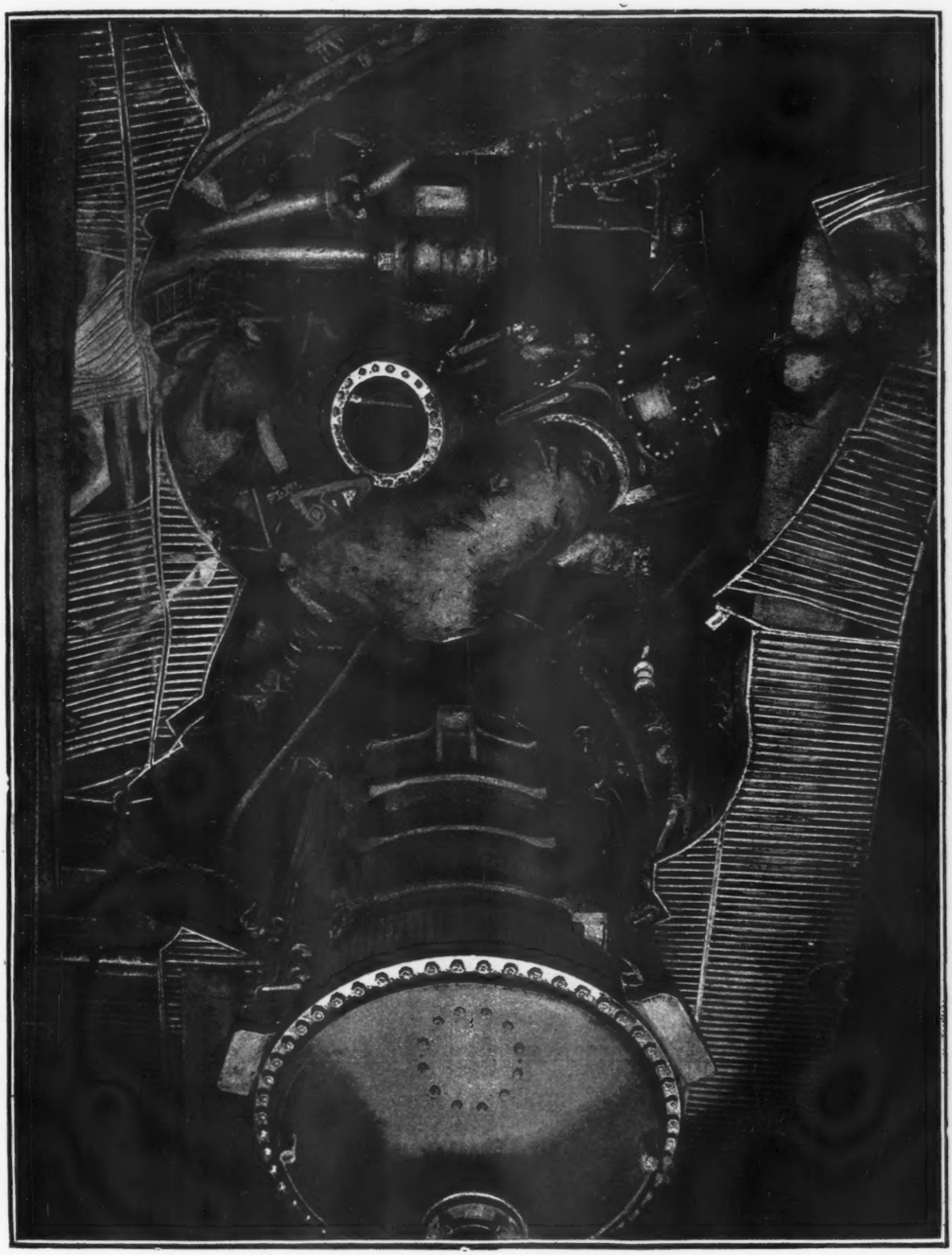
A syndicate have been organized at Waterbury, Conn., the purpose of which is to manufacture sell and deal in any and all articles composed wholly or in part of brass, iron, steel or any other metal, and of any compound thereof, and also when associated with wood, glass, leather or any other substance, and to do all things incident to said business. The amount of capital is $250,000. The stockholders are George Robinson Smith, George W. Kenyon, C. P. Goss, F. L. Curtis, and F. L. Curtis, trustee; E. C. Lewis and C. P. Goss, trustee.

Work has been commenced by Thomas Moody of the Auburn Die Cutting Works on the new shop which he is to build near his present location on Miller street, Auburn, Maine. The new shop will contain 800 feet of floor room, and will be one story in hight.

An amendment to the Fortification Appropriation bill, proposed by Senator Teller, Wednesday, directs the Secretary of War to contract with A. H. Emery, of Stamford, Conn., for 10-inch, 12-inch, 14-inch, 16-inch and 20-inch service guns. The guns are to be breech loading rifled steel guns, and before purchased, shall be subjected to certain tests. An appropriation of $3,000,000 is made, to be available at the rate of $500,000 a year.

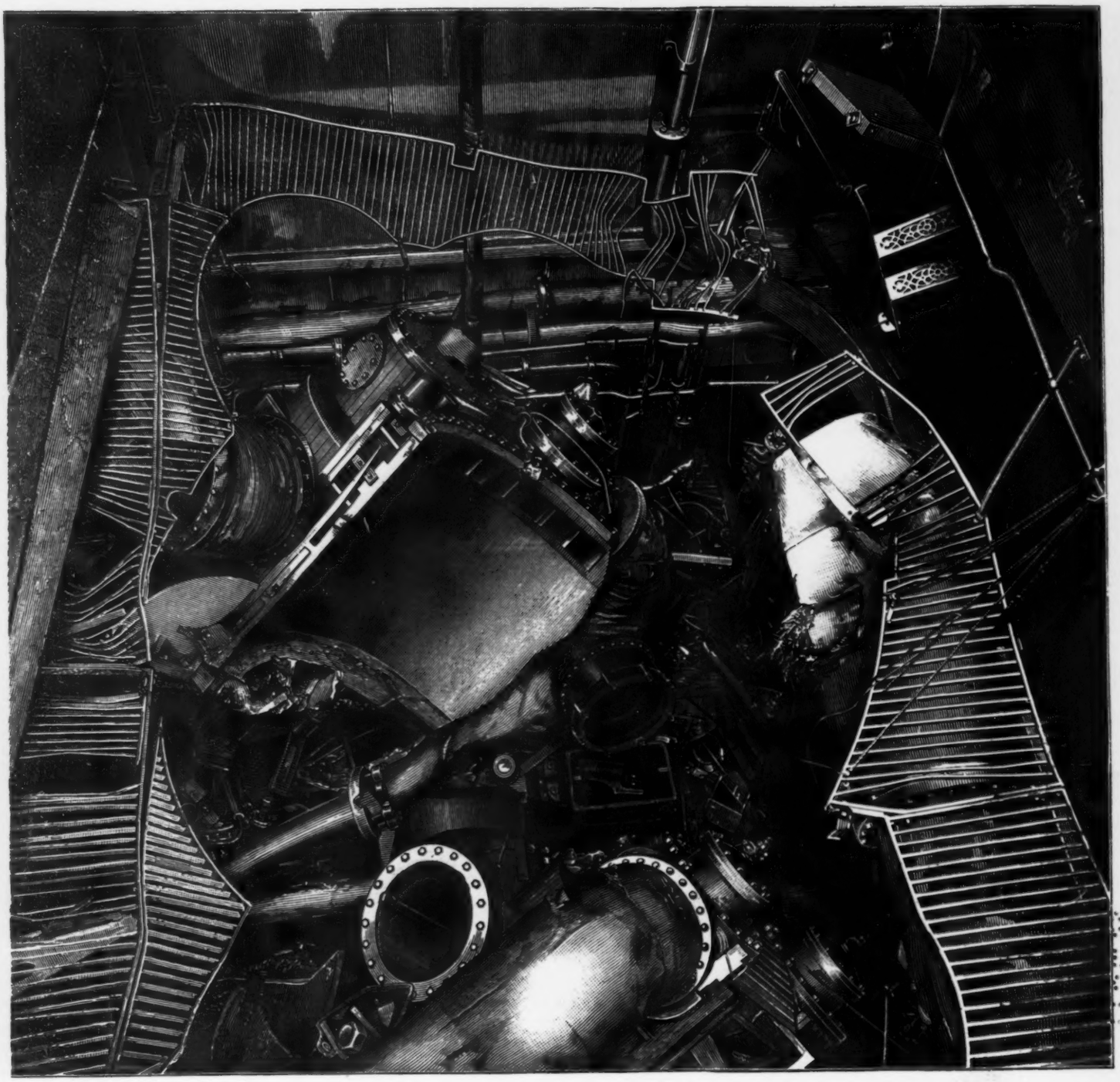
A. F. Waltzinger and William L. Everit, Jr., of New Haven, have patented a receptacle for ice cream. Heretofore ice cream has been packed in cans surrounded by salt and ice in tubs, and the salt and ice has often got into the cream itself. The new receptacle is a neat box of wood with galvanized iron lining. An inner box of iron is so arranged that the ice and salt cannot by any possibility reach the cream. Cream in these boxes will keep from 16 to 20 hours even in the heat of midsummer. The boxes are compact, neat and light, and are made in convenient sizes, holding from one to four quarts. Within a few days the inventors have received orders for upwards of $5000 worth.

Pitkin Bros. & Co., of Hartford, Conn., have the contract for the new boiler for the H. L. Judd Mfg. Company, in Wallingford, and C. H. Brown & Co., of Fitchburg, Mass., the contract for the new 100 horse-power engine for the same company.



VIEW LOOKING VERTICALLY DOWNWARD.

THE WRECKED ENGINES OF THE STEA



VIEW TAKEN AT A SLIGHT ANGLE.

THE STEAMSHIP CITY OF PARIS.

MANUFACTURING.

Iron and Steel.

James P. Witherow, of Pittsburgh, has just closed a contract with the Bristol Iron and Steel Company of Bristol, Tenn., for the erection of a blast furnace plant. It will consist of one stack 17 x 75 feet, which will be equipped with three standard Whitwell stoves, 20 x 70 feet. The boiler equipment will consist of 16 boilers, 54 inches in diameter and 30 feet long, with two 18-inch flues. The blowing power will be furnished by three automatic engines, with 42-inch steam cylinders, 84-inch blowing cylinders, and 60-inch stroke. These engines are of a new design and are fitted with the Wheelock valve. Eighteen of these engines are now under construction at the shops of James P. Witherow at New Castle, Pa., for blast furnace plants in various parts of the country.

The new open-hearth plant now in course of erection at the Homestead Steel Works of Carnegie, Phipps & Co., Limited, at Homestead, Pa., is rapidly approaching completion. There will be eight basic furnaces in the plant, and it is expected that one of them will be ready to commence operations about June 1 next. New and improved ingot, charging and ladle cranes will take the place of the old cranes, which will considerably reduce the number of men required to operate the plant.

Reports have been current for several days to the effect that an English syndicate was about to purchase the plant of the Standard Iron Company, at Bridgeport, Ohio. L. S. Delaplain, president of the firm, states that there is nothing in the rumor further than that negotiations have been pending for the sale of the property for some time, and that if the parties agree to take the property at the price named by the company the sale will be made. It is understood that this price has been favorably considered by the foreign capitalists. The Standard Iron Company are now getting the views of their stockholders on the question of selling the plant, and it is not improbable that something definite may take place in the near future. In this connection we would add that negotiations are also pending for the sale of several iron and steel plants at Wheeling, W. Va., and it is understood that the same parties are interested that are negotiating with the Standard Iron Company.

The new blast furnace of the Clinton Iron and Steel Company, at Pittsburgh, was put in blast on Monday the 28th ult. It is known as Clinton, and will turn out about 100 tons per day. This stack has taken the place of the old Clinton furnace, which was the oldest blast furnace in Allegheny County, having been built in 1859 and remodeled in 1889. During the last few years of its operation it turned out about 40 tons per day. The new stack was erected and put in operation in 80 days from the time the contract was let.

The Swindell & Smythe Company, engineers and contractors, Lewis Block, Pittsburgh, Pa., have closed contracts with the Pennsylvania Tube Works, Pittsburgh, for the remodelling of their entire furnace plant. This firm now have common furnaces running with natural gas, but owing to the insufficient supply of the latter they have decided to put in the above named firm's regenerative artificial gas furnaces. There will be 13 furnaces in all, consisting of tube welders, benders, butt weld, sockets, &c. They will build 16 of their circular gas producers. These gas producers will be equipped with a number of improvements recently designed by the Swindell & Smythe Company, by which they will gasify the coal cheaper and more economically than the old style furnace This firm have quite a record on their tube mill furnaces. They have made from 1400 to 1500 2-inch pipe and 360 6-inch pipe of standard length per turn of ten hours, and the cost per ton, welding fuel, &c., has not exceeded 62½ cents per ton, but they expect to run their furnaces cheaper for the Pennsylvania Tube Works, as the cost for coal is less in Pittsburgh. They have contracts with the Oil City Tube Company, Oil City, Pa., and Tyler Tube and Pipe Company, Washington, Pa., for their entire tube welding furnace plants, and they are also making more additions to the furnace plant at the Paige Tube Company, at Warren, Ohio, which they recently remodelled. They are also building two 30-ton open hearth furnaces, a four hole soaking pit furnace and 12 gas producers for the Phœnix Iron Company, of Phœnixville, Pa. When this mill was first built the Swindell & Smythe Company built all their furnaces, and the plant they are now putting in will more than double their capacity. They have also contracted with Macneale & Urban, of Hamilton, Ohio, for their plate heating furnaces and also with the Carroll Porter Boiler and Tank Company, of Pittsburgh, Pa., for their flanging furnaces.

Since the rod mill of the New Castle Steel Company, at New Castle, Pa., was put in operation on single turn the two crews have been working on alternate days, and this started a rivalry between them as to which crew could turn out the largest amount of wire in a day. The result of the competition has been to increase the daily output at a rapid rate. On Tuesday, the 29th ult., one crew made upward of 169,000 pounds, and on Thursday, the 1st inst., the crew for that day turned 175,000 pounds. An effort will be made to beat the world's record.

The Harvey Steel Company, with $1,000,000 capital stock, have been incorporated in Illinois, to deal in railroad cars and supplies.

An erroneous report is in circulation in Chicago relative to the Washburn & Moen Mfg. Company. It is stated that the company propose to erect a large plant, "including smelting works," at South Chicago. H. B. Cragin, Western manager for the company, says that the report is utterly devoid of truth. In common with other Eastern manufacturing concerns, the Washburn & Moen Company have had inducements of all kinds offered them to move West or to establish a Western manufacturing branch, but the matter has not progressed even so far as to inquire into the respective merits of the inducements offered. At some time in the future, it is not improbable, a movement of this kind may be made, but thus far no steps have been taken in that direction.

J. O. Richards, of Philadelphia, has purchased the Milldale Rolling Mills, situated at Port Clinton, Pa., for $10,300.

The new sheet mill of the Wheeling, W. Va., Iron and Nail Company will shortly start up.

The new steel furnaces of the W. Dewees Wood Company, of McKeesport, Pa., are about completed. If found satisfactory, the plant will be enlarged to such an extent that the steel furnace department will be one of the largest at the plant.

The Norway furnace, at Bechtelsville, Pa., operated for over eight years by Gabel, Jones & Gabel, Pottstown, has blown out

The Elk Rapids, Mich., Iron Company are filling an order for $250,000 worth of iron as fast as it can be shipped.

A meeting of the incorporators of the Virginia Steel and Iron Company, recently chartered, has been called at Lynchburg, Va., for the 9th inst., to perfect the organization and proceed to business.

The Greensburg Steel Works, at South Greensburg, Pa., were started up on the 30th ult. The works produce steel for the manufacture of tools.

The foundations are nearly finished for the mammoth steam-hammer being built at the Bethlehem, Pa., Iron Company's works.

Prominent Cincinnati iron men have decided to build extensive works at Gadsden, Ala., and will begin with the erection of a rolling mill, with a capacity of 100 tons of bar iron a day, and two sheet iron mills. The Land Company, of Gadsden, has donated a site for the enterprise, and has given them a fifty thousand dollar bond guaranteeing an inexhaustible water supply.

Work on the Fort Worth Rolling Mills, Fort Worth, Tex., which has been suspended for some time, has been resumed.

It is stated that the Attalla Iron and Steel Company, of Attalla, Ala., will erect four 50-ton charcoal furnaces.

The Henderson Steel Works, of Birmingham, Ala., made their first cast on the 25th ult., since enlarging their plant.

In January last the men employed in the Birmingham Rolling Mills, Birmingham, Ala., demanded that the Union be recognized, and the works were shut down. Mutual concessions have been made, and the 1000 men who have been out returned to work on Monday.

According to advices from St. Louis, the report last week that the Tudor Iron Works had consolidated with the Waugh and Valley Mills was a mistake. The Belleville Steel Company, a new corporation with a capital of $450,000, has bought the Waugh Steel Works and the Valley Steel Company, and will operate them both with the following officers: T. A. Meysenburg, president; W. W. Waugh, vice-president; B. S. Adams, secretary, and F. W. Oliver, treasurer.

The Colorado Coal and Iron Company, at Pueblo, Col., contemplate the building of a third blast furnace at their plant. The company have lately investigated the iron mines at Fairbanks, Wy., as the source of an ore supply.

Last week the rod mill of the Iowa Barb Wire Company, at Allentown, rolled 172,683 pounds of No. 5 rods during the day turn, and 201,719 pounds during the night turn.

The Piedmont Land and Improvement Company have contracted with Gordon, Strobel & Laureau, Lim., of Philadelphia, for a 60-ton charcoal blast furnace, to be built at Piedmont, Ala. This will be followed in the near future by a 125-ton coke furnace, to be built by the same firm. The first furnace, will be completed by January, 1891. Piedmont has an abundance of ore, timber for charcoal and good coking coal in very close proximity.

The desire for shorter hours has manifested itself among the employees of the National Tube Works Company, at McKeesport, Pa., the employees of that company having sent in a request for shorter hours or a 10 per cent. advance in wages. The request was presented to General Manager Patterson on the 5th inst., and it is expected that an answer will be made during the present week.

The two blast furnaces of the Philadelphia and Reading Coal and Iron Company, at Conshohocken, Pa., are soon to be torn down. Proposals for the removal of the furnaces are being received by the company, and will be opened during the present week. The highest bidder will find

himself the owner of two blowing engines, sixteen large boilers, about 150 tons of cast iron.

Mary furnace, of the Ohio Iron and Steel Company, Lowellville, Ohio, met with a serious accident on the 30th ult., which will necessitate rebuilding a portion of the stack. As the furnace was being blown out, preparatory to putting in a new lining, the stack became very hot, and as the last cast was drawn off the lining fell in, the shell collapsing and falling to the ground. The work of repairing has been commenced, and will be completed about the 15th of June.

Machinery.

The Lloyd Booth Company, of Youngstown, Ohio, have just finished the erection of an addition to their foundry. It is 60 feet long and 50 feet wide, and is fitted up with a 30-ton crane built by the Phœnix Iron Works Company, of Cleveland, Ohio. The Lloyd Booth Company are filling a large order for rolling mill machinery for the Birmingham Rolling Mill Company, of Birmingham, Ala., and have numerous other contracts on hand that will keep them busy for some time to come.

The Pennsylvania Diamond Drill and Mfg. Company, of Birdsboro, Pa., have built from the designs of Wm. F. Durfee, manager, for use in their shops at Birdsboro, a boring machine that will bore from 1 inch up to 22 feet in diameter, and will turn pulleys up to 22 feet in diameter and 12 feet face. The hight of the machine is 23 feet 6 inches, and the floor space occupied is 690 square feet. The machine has 48 changes of speed and 96 changes of feed, and weighs 108,000 pounds, its bed plate weighing 17½ tons.

James Lappan & Co., proprietors of the Iron City Boiler Works, at Pittsburgh, have just received an order which is a little out of the ordinary. It is for wrought iron water pipe 22 inches in diameter, and the pipe will be riveted by the firm in the same manner that a boiler is riveted. This will be done in Pittsburgh before shipment. The shipment will weigh over 900,000 pounds.

The Johnson Axle Works, which were recently burned at Wilmington, Del., are being rebuilt.

Robert Allison & Sons have just shipped from their Franklin Iron Works, at Port Carbon, Pa., the large pair of hoisting engines which they built for the Croton Aqueduct at New York City. The engines are 25-inch cylinder and 60-inch stroke, with conical spiral drums. The engines are fitted with a number of novel appliances, among which is a way for letting out or taking up the rope quickly, enabling them to hoist from any point in the shaft. The links and valves are operated by steam movement, and there is an automatic stop motion to prevent overwinding.

Gail, Bumiller & Unzicker established the Chicago Iron Works at Hawthorne avenue and Willow street, Chicago, about a year ago for the manufacture of mining machinery. Within this brief period they have built up quite an extensive trade. They have a well equipped machine shop and blacksmith shop and are now working a force of 80 hands, building steam engines, hoisting machinery, air compressors and general mining machinery. The machine shop is very conveniently arranged. A skylight deck runs down the center, with a row of heavy posts extending along each side, supporting a traveling crane. The machines are so arranged that all heavy pieces can be handled to and from them by the crane. Hand power is used at present in operating the crane. The firm have a great deal of work on hand at present, and have just booked some good orders from mining companies in Montana. Among them is an order for a 250 horse-power hoisting engine. The heaviest piece of work now in progress is a 500 horse-power engine for Chicago parties. When the firm first planned their works they contemplated adding a foundry, but were from the start so driven with orders that they found it would be necessary to build a much larger foundry than was intended. The completion of this part of the plant has therefore been deferred until a more convenient opportunity presents itself.

Wm. B. Pollock & Co., proprietors of the Mahoning Boiler Works, at Youngstown, Ohio, have just completed the erection of an addition to their plant measuring 60 x 140 feet. It is fitted up with a 10-ton crane and a new riveting machine with a 10-foot gap built by the Wm. Sellers Company, Incorporated, of Philadelphia. The firm have also added a new 15-ton steam hoist and a new set of rolls. They are now prepared to turn out heavier work than heretofore.

J. J. McCabe having purchased the business of E. P. Bullard in the New York Machinery Warerooms, has moved the entire stock to his new building, 68 Cortlandt street, New York City. Mr. McCabe had been connected with E. P. Bullard for 13 years, and proposes to continue the business of dealing in all kinds of new and second hand machinery.

The Mason Regulator Company, of Boston, Mass., are putting on the market a new steam damper regulator for automatically controlling the pressure in the largest steam boilers. Two sizes are manufactured weighing 15 and 30 pounds respectively. The largest size is only 18 inches high.

Hardware.

The old Manhattan Hardware Works' property, at Reading, Pa., idle for several years, has been bought by Walter S. Davis and Charles W. Wilhelm, of that city, who will enlarge and improve the works for the manufacture of bolts, nuts, &c., on an extensive scale.

The Ashley Wire Company, of Joliet, Ill., have been operating a wire mill and a barb wire factory for some years in the State Penitentiary at that point. Their lease expires in July, and the Convict Contract Labor bill prevents its renewal. The company have, therefore, bought the property of the Northwestern Tile Company, at Joliet, and will remove their machinery to it. It is reported that they propose to add to their line the manufacture of wire nails.

The Forsyth Scale Company, of Youngstown, Ohio, are operating their works full time, and have enough orders booked at present to keep them busy for some time to come. They report trade much better than at any time last year.

Chalfant Mfg. Company, Atglen, Pa., have purchased between three and four acres of ground at Lancaster, on the line of the Pennsylvania Railroad, upon which they expect to erect shops during the present year. Their business will not be changed from Atglen until the completion of their factory at Lancaster, which will not be for some time to come. Their new plant will give them increased facilities for the manufacture of their Mrs. Potts' cold handle sad irons and a line of gas heating irons, tailor irons, shelf hardware, &c. The trade will therefore please to note that the company are to be addressed at Atglen, Pa., until further notice.

The Springfield Architectural Iron Works, of Springfield, Ohio, state that by the rapid increase in their business they have been compelled to build an addition to their present plant 40 x 50, two stories. This will give them a total floor space of 6000 square feet. The new addition will be devoted exclusively to the production of fence work. The productive capacity of their lawn mower department has been fully contracted for, and for which they are daily compelled to refuse orders.

Geiger & Bush, Bucyrus, Ohio, are erecting a one-story addition, 25 x 18 feet, and one two-story, 59 x 24 feet, the smaller of which will be used for brazing and forging, while the larger will be devoted to general shop purposes. When completed the capacity for the production of copper kettles, still work, &c., will be double that at present. The additions are expected to be completed by June 1.

The Toledo Wire Nail Company, Toledo, Ohio, of which J. R. B. Ransom is president; J. M. Lively general manager and treasurer, and John Farley secretary, have recently started up their new plant located at West Toledo, where they occupy land approximating about five acres in extent, immediately adjoining the Lake Shore and Michigan Southern tracks, upon which has been erected a brick structure, one story with elevated floor, 152 x 76 feet, in which has been placed 52 nail machines of the Hastings patent, with a capacity for 400 kegs per day of ten hours. The power is furnished by a 75 horse-power "Fitchburg" engine, connected direct to the line shaft, which is located under the elevated floor. Thirty hands are at present employed making all the standard sizes and some special. A separate office building, 25 x 30, adjoins the factory. The company already have orders for a large share of their productive capacity.

The Ohio Lantern Company, Tiffin, Ohio, finding their present premises inadequate, have commenced the erection of a two-story warehouse and packing room measuring 50 x 44 feet, this being the third addition since their removal from Findlay, two others being erected in 1889 measuring 24 x 70 feet.

The new shops of the Krein & Standish Mfg. Company, located at St. Mary's, Ohio, consist of a main building 180 x 54, an L 100 x 54, boiler house and engine room 20 x 30 feet, polishing sheds, &c., which will be connected by a switch with the Lake Erie and Western Railroad where the company possess ten acres of land. The works will also be connected by rail with the projected road to be known as the Toledo, St. Mary's and Cincinnati Railroad, which will be built this summer. The manufacturing facilities consist at present of 45 foot-power hammers, 4 power hammers, 2 large hot link winders, 3 for winding cold; 40 heating furnaces and one large heating furnace for the extra large size coils. Power is supplied by a 60 horse-power engine. The present capacity of the company is about 7 or 8 tons of finished chain per day. This will in the near future be increased to 10 tons. Seventy hands are employed.

Miscellaneous.

A corporation, to be known as the Novelty Wire Works Company, has been organized at Portland, Maine, for the purpose of manufacturing and dealing in wire work of all kinds.

The Erie, Pa., File Works are to be moved to Painesville, Ohio.

A company to manufacture and sell iron and brass products in Denver, Col., have been incorporated under the style of the Berry Iron Works Company, with a capital of $25,000.

The Chalmers Spence Company, asbestos manufacturers, who have hitherto had their office and salesrooms located at their factory, 419–425 East Eighth street, have transferred this part of their establishment to 59–61 Liberty street.

THE WEEK.

The Master Builders' Exchange of Philadelphia have issued the prospectus for the first season of their mechanical trade schools, which will not begin until September of this year. It is proposed to give evening instruction in carpentry, bricklaying, plastering, stone cutting, blacksmith's work, painting and plumbing. Fees will be charged of such an amount as to cover the cost of tuition. For a season of nine months, three evenings per week, the charge is to be $18. The schools are expected to teach the pupils how work should be done, leaving the graduate to acquire what may be termed commercial speed by actual work at his trade. The committee in charge is careful to impress upon the minds of applicants that practice outside of the schools will be required to develop quickness and dexterity.

The lumber interest in Chicago has been seriously affected by the carpenters' strike, there being no sale at any price At present there are some 10,000,000 feet of lumber on the market. The stock on hand in yards shows an increase of 12,000,000 feet of hard wood lumber over last year at this time, and a decrease of 30,000,000 pine.

No imperial tour over a royal domain could surpass in impressiveness and practical results the grand ride of thousands of miles just completed by the Wizard of Wall street over the network of railways known as the Gould system. Mr. Gould, passing from New York to St. Louis, left the latter point eight weeks ago, going South over the Iron Mountain line to Texas. He made a brief stop at Hot Springs, and after entering Texas at Texarkana he proceeded leisurely to look that State over, and was cordially received at all the leading cities. Passing on to the City of Mexico Mr. Gould met with an equally hospitable reception there, and upon his return to Texas he talked business concerning the development of railroad properties in the Southwest. Returning through Northern Arkansas he inspected the Missouri Pacific extensions and stopped at several places. The remainder of the trip included a run through a portion of the Indian Territory, Kansas and Missouri, the last halt for the night being made at Jefferson City.

The chief impediment to the proposed Harlem River ship canal is the opposition of the New York Central and Hudson River Railroad Company, who, together with New York and Harlem and the New York and New Haven, are the only steam surface roads that enjoy a franchise to enter New York City. If the Harlem water route is made a tidewater ship canal it will be necessary for the company to do one of two things—either build a new drawbridge at Fourth avenue or construct a tunnel. A bridge will cost, with its graded approaches, about $300,000, while the cost of a tunnel is estimated at $1,000,000. The present bridge was built nearly 40 years ago, and is only 9 feet in the clear above high-tide level, while the State laws governing the Harlem River improvement call for bridges with a hight at the draws of not less than 24 feet above high water of spring tides. A tunnel could, of course, afford unrestricted and constant passage of trains. The elevated roads and the Northern Railroad have complied with these requirements, and the city did the same when it built the Madison avenue Bridge.

Ives and Stayner, known to fame as the "Napoleons of Finance," have returned to business operations, and are said to contemplate entering into a manufacturing scheme on high-pressure principles.

The Florida phosphate lands are coming sharply into competition with the famous beds in South Carolina.

Gen. Benj. F. Butler declares himself relentlessly hostile to farm mortgages, which he says are largely accountable for the prevailing depression in agriculture. Accepting the statement as a fact that $3,450,000,000 is invested in these mortgages, bearing an interest at from 7 to 9 per cent., together with the commissions of agents, he affirms that payment is impossible and that a "financial cyclone" is somewhere in the future, the average profits on farming industries being less than 5 per cent.

As serving to throw light upon the question of the investments of foreigners in the United States, respecting which opinions differ widely, it appears from the last report of the Union Pacific Railway that 171,003 shares in that company were held in foreign countries December 31, 1889, against 132,479 December 31, 1888. Here was an increase of 38,524 shares in a single year, or about 30 per cent. The number of shares is 606,866, so that at the beginning of this year about 28 per cent. was held abroad. A calculation has been made on the assumption that one-half of the railroads have their stocks held abroad in like proportion. This would imply an aggregate investment considerably exceeding 1,000,000,000 in railway securities, for the proportion of bonds held abroad is probably as great as of stocks, and it is thought to be not improbable that the amount payable abroad on account of interest, indebtedness or profits on American investments averages more than 50,000,000 yearly.

The increasing commercial importance of Athens, the ancient capital of Greece, suggests the possibility of a future for that city which shall bear some comparison with the renown enjoyed by it in the past. A correspondent at the Acropolis says: "There has been a resurrection here—a marvelous revival of modern life on the ancient scene—and much of it is due to the spade of Schliemann and his coadjutors in the work of disinterring the bones of old civilizations and barbarisms. Perhaps there is no city in the world whose history for the past half century has been so remarkable as that of Athens since 1840, when it was a mere collection of poor inhabitants and the skeleton of a dead past. It has now become a city as large as Boston was in 1840, with new buildings, finer than any in Boston or any American city save Washington; and it is fast becoming the real center of the oriental or Levantine world, destined to supplant Constantinople, Alexandria and the other places that have till lately been far in advance of it, materially considered."

A Mexican paper says the smelters on the American side of the border are to remove into the neighboring republic, and that the city of Chihuahua will become more important as a smelting center.

More than 1000 miles of new railway are in operation in the Indian Territory, and 7500 miles in addition have obtained right of way and been applied for, making a literal "gridiron" in the wilderness.

Señor Romero, the Mexican minister, verifies the report that European capitalists have made proposals to assume the railroad indebtedness of the Government of Mexico. He says: "The idea is to fund the debt by issuing interest bearing bonds, 2 per cent. of the principal to be paid yearly, and thus extinguish the debt in fifty years. Otherwise, in accordance with existing contracts, the whole debt would have to be taken up in from five to ten years, and the present generation would have to stand the entire burden."

The extensive improvements contemplated by the Pennsylvania Railroad Company make necessary an issue of $9,000,000 additional stock. With this money the elevated road at Jersey City will be built, the laying of third and fourth tracks on the New York division completed and additional tracks and sidings laid on the main line. About $2,000,000 will be expended for locomotives and cars.

The fruit steamer Neptune, just put into the Jamaica fruit trade, has a revolving fan nearly eight feet in diameter, which can change all the air in the hold in less than two minutes.

Another subsidy bill was reported by Senator Frye, on Saturday, to promote ocean mail service and commercial intercourse. The Postmaster-General is authorized to make contracts for a term of ten years for the transportation of the mails in American steamships between the United States and foreign ports. The steamships are to comprise four classes, all but the smallest to be of iron or steel, the largest to register not less than 8000 tons, and to be capable of maintaining a speed of 20 knots an hour. The first three classes must be constructed with special reference to conversion into naval cruisers. The compensation varies from $6 to $1 per mile, according to class. Senator Frye says he has reason to believe that if this bill shall become a law the finest line of steamships in the world will be built and put on between New York and Liverpool at the earliest day possible; that a line of second-class steamships will be established forthwith between New York and the Rio de la Plata, and two lines from the Pacific Coast to Japan, China and Australia.

The Adams Express Company, which had its beginning 50 years ago, when Alvin Adams started a parcel express between New York and Boston, to-day has a capital of $12,000,000 and employs 20,000 men.

The housesmiths and manufacturers of architectural iron came to an agreement on Sunday, in this city and Brooklyn, with the assistance of Master Workman Powderly. All workmen in the trade are to be paid by the hour, and to work nine hours for five days and eight hours on Saturday. All overtime to be paid time and a half for the first four hours and double time after.

The bridge over the Bronx River was burned, delaying travel on the Harlem road. It should be replaced with iron.

The customs officials at this port are closely co-operating to exclude contract laborers.

In the House of Representatives, on the 1st inst., the Senate bill to protect trade and commerce against unlawful restraints and monopolies was carried, on its final passage, with a single dissenting vote.

The official Bremen navigation report contains the statement that arrivals there from America for 1889 were 694,000 tons, against 611,000 tons for 1888. A further growth of this business is expected during the current year, because of the establishment of a special freight line to New York.

There are six States—Colorado, Nevada, North and South Dakota, Montana and Washington—represented in Washington by 12 senators all staunch advocates of free silver coinage. According to a rough estimate, it may be assumed that their total population is about equal to that of the City of New York. The question might be asked whether it is either modest or just for these young "sister States" to dictate a national policy so radical as that which they now demand.

William F. Slingluff, cashier of the Montgomery National Bank in Pennsylvania, who resigned last week in consequence of financial difficulties, is treasurer of the Pennsylvania Rolled Steel Car Wheel Company.

The Iron Age

New York, Thursday, May 8, 1890.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, JR., - EDITOR.
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS - - HARDWARE EDITOR.
JOHN S. KING, - - - - BUSINESS MANAGER.

The May Day Demonstrations.

The first of May labor demonstration, heralded with a flourish of trumpets, was disappointing to agitators. In New York the socialists displayed only peaceful umbrellas in lieu of red flags. The carpenters, who were to lead, postponed their movements to the Monday following. The central point of enthusiasm, taking the country at large, was Chicago, where 30,000 workmen celebrated the inauguration of an eight-hour day; but there was no rioting, no tumult. The Philadelphia carpenters went on strike, but many of the masters conceded their demands, and the same was true of Boston. Movements in other cities had little significance.

In several large European cities there were formidable and, at times threatening demonstrations; but, contrary to expectations, there was no bloodshed, unless the accidents resulting from the reckless charges of cavalry upon the boisterous crowds in Paris can be regarded as exceptions. And there were bayonets in Berlin, but nothing really serious occurred. In Vienna so many industrial establishments were in operation that the absentees probably did not exceed 15,000 or 20,000, and these were earnestly exhorted by their leaders to abstain from violence. Brussels, the supposed center of discontent, was very quiet. At Charleroi some 40,000 men marched through the streets singing the "Marseillaise." In Rome the riotous disposition manifested was repressed by heavy rains. The labor demonstration in London was peaceful.

Altogether the results of the day, which so many regarded with apprehension, and reasonably, too, were a memorable triumph for law, order and peaceful industry. For this the millions of wage-earners who, while manifesting their enthusiasm, at the same time were conscious of their responsibility as citizens, may rightly appropriate a large share of the glory. On the other hand, the reckless dynamiters of all lands—anarchists who "would rule in hell rather than serve in heaven," men who would repeat the scenes of the Paris revolution—must have received a new revelation. The *inferno* of which they have dreamed is further away than they had imagined. Now that all is over, the industrial world will breathe easier.

A correspondent calls our attention to one factor in the labor situation to which altogether too little attention has been given, and that is the attitude of the farm laborer and the agriculturist generally. While workmen in industrial pursuits are steadily pressing for shorter hours and larger pay, the position of the agricultural laborer and small farmer has remained practically the same. During the season he is busy from daybreak to sundown. His wages or his earnings are small as compared with the factory hand, and are very low when contrasted with the union rates in the building trades and in many branches of manufacturing. The natural result is a pressure to enter the more remunerative branches of work, a tendency strengthened by the attractions of life in cities. How even the strictest union organizations can resist such a pressure is doubtful. With a degree of intelligence above the average, those raised in agricultural pursuits naturally seek entrance into the ranks of the skilled men rather than compete with immigrants for the chance to do common labor. The eight-hour movement, if successful, will add a powerful impetus to this natural tendency. There is another feature not to be overlooked. As our correspondent remarks, the agricultural and the industrial laborers are working for one another. Higher pay for one means higher expenses to the other.

The Financial and Commercial Situation.

There has been a notable revulsion of feeling in financial and commercial circles during the past few weeks which augurs well for a recovery in the iron trade. As yet professional operators alone have begun to act on the bull side of the markets, but there are indications that the general public is beginning to be attracted by chances for investment and speculation. Sentiment so largely sways great movements of this character that constant and close study of the indications of a speculative revival is necessary to detect the direction of the current. The time required to carry out projects involving the purchase of large quantities of iron and steel is very short now as compared to what it was ten or fifteen years since. When once the construction of a great railroad is determined upon it is presumably carried out in an incredibly short period. The building of the Manitoba road is a striking example. It is probable that more time is employed to mature and finance an undertaking than that needed for the actual work of construction.

While relatively little has been done during the last two years in extending our railroad mileage, a good deal of work has been carried on quietly in perfecting plans for extensions. They have reached a point where the only obstacle to the giving out of contracts is the floating of bonds and stock. That has been, generally speaking, a very difficult matter. Capitalists and bankers have been busy over reorganization schemes. They have had very little disposition to entertain, and little opportunity to recommend to their clients, new ventures, however promising. But matters may take a very different aspect as soon as the investing public generally has had even a brief period of successful operations, the majority generally acting on a rising market. They will be found quick to change their attitude of indifference to one of activity. Then the amount of preparatory work done during the past two years would soon tell, and would tend to lend an impetus to the movement.

Changes of this kind occur very rapidly and influence the iron trade more quickly now than they formerly did for the very reason to which we have alluded. The mechanical work of construction is now carried out under such high pressure and so quickly that requisitions for supplies follow one another in very rapid succession. In other words, the transition from dullness to rushing activity in the demand for constructive material is likely to be surprisingly short when it does come. That contingency seems to be nearer than the majority are willing to admit.

Old Material in the West.

A peculiar situation is developing in the West with regard to old material, which forms a very important part of the rolling stock. The downward movement in the price of the finished product has continued to such an extent that manufacturers have grown very bearish on the price of raw material. They insist that old iron rails and wrought scrap are too high in comparison with the price of bar iron. In the belief that these materials will be much cheaper than now, they have not hesitated to enter bar iron orders for future delivery which would not yield them a profit worth considering if made from stock bought at ruling prices. Large contracts of this character are reported to have been made by quite a number of manufacturers, who will wait for a further decline before covering their requirements of old material. They are liable to commit a serious error if they continue to pursue this policy. Even now old material is not in plethoric supply in the West, and it is the belief of those who have carefully studied the situation that a buying movement of but moderate proportions will develop a decided stiffening of prices on the part of holders. They base this belief to some extent on the absence of the usual spring accumulation of old material. The mildness of the past winter enabled the railroads to make track repairs almost as freely as in other portions of the year, and the market was therefore regularly supplied from that source, whereas an ordinary winter would have almost wholly prevented such work and compelled it to be deferred until spring. Within the past week old rail buyers have had much difficulty in securing a few hundred tons in the Chicago market, and prices have been appreciably stronger. When the mills begin to seek rails the aspect of affairs changes very decidedly to those who have rails to sell. They take advantage very quickly of an opportunity to add something to their asking price. The experience of the summer of 1888 may be repeated, and if it is the price of a number of iron products will be

considerably advanced in sympathy with the price of rails. It certainly seems time for the manufacturers of bar iron to halt in their policy of selling at lower prices in the presumption that their raw material will continue to cheapen.

Western Molders' Strike.

The molders' strike, which has been brewing for some time, was inaugurated in Chicago on the 2d inst. It is reported to have begun in the works of the Chicago Malleable Iron Company, whence it soon spread to other establishments. The strikers asked for an eight-hour day and more pay for overtime. Piece molders and other employees struck in sympathy with the day molders and without any special grievance of their own. In some establishments in which but few day molders were employed their demands were conceded at once, to prevent work from being delayed in other departments. While a strike among the molders has been mooted for some time, and regarded in many quarters with more or less apprehension, it was supposed that action would at least be deferred until the carpenters had settled their strikes in the large cities. This was the plan of the labor leaders, who shrewdly schemed how "to divide and conquer" employers. But the molders and a number of other workmen are too impatient to taste the sweets of short hours of labor to wait for the outcome of the carpenters' strikes, and they have precipitated a fight on their own account.

This element of disturbance has thus been projected into the iron trade at an unexpected time, and a new set of calculations must be made on the future course of the demand and prices. If the strikes among the molders are short-lived—and there is much reason to hope and believe they will be—the effect on the iron trade will be very slight. But if, on the other hand, a prolonged contest takes place, it will unsettle the price of foundry pig iron and thus affect more or less the whole iron line. It is a much more serious matter than the strike of the stove molders a few years since, as that was confined to a few works and to only one branch of trade. Now, however, it is understood that all classes of molders are or will be concerned in the movement for shorter hours or advanced wages.

It is remarkable what a fascination certain lines of business possess which are manifestly overdone. The stove trade, the nail trade, the bar iron trade and quite a number of other branches of the iron business cannot now support all or even nearly all the manufacturing establishments erected in their lines, and yet others are constantly being added. Reference is not made here to works which are being erected in parts of the country not previously supplied with them, but to the additions which are constantly being made to the productive capacity of old manufacturing localities. It is probably better to engage in manufacturing staple goods than to turn out something of an ephemeral character or which will only have a temporary sale. But it is unfortunate for those in the trade, as well as for the newcomers themselves, that so little attention appears to be paid to the question of marketing product. Nails, for instance, are so decidedly similar in every respect that a new manufacturer cannot hope to build up a reputation for quality or superior finish. He very probably studies the question of cost alone, and relies upon a new machine to turn them out cheap enough to enable him to compete with other makers. But he competes in a market already crowded. A bar iron maker may have a better chance than a nail maker, because quality does count in that trade to some extent. But the market for good iron is limited and there are plenty of competitors. The stove trade seems to offer an opportunity for a man of cultivated taste combined with good business qualifications. But even there he will find an overwhelming array of competitors blessed with just such qualifications and probably in greater degree than himself. Expansion of manufacturing facilities in staple lines is one of the serious conditions of the time and for which there seems to be no remedy.

Iron and steel manufacturers are finding an increasing demand from what may be termed irregular sources. The manufacture of special articles is growing to such an extent that unusual shapes and odd sizes of manufactured iron and steel constitute a branch of trade which is by no means to be despised. The maker of a small article often strikes something so popular that his trade becomes valuable to the mill which has produced for him a peculiar shape not to be found in the market. The manufacturers of bar shapes in iron and steel place their main reliance on the heavy annual contracts made with agricultural implement works, wagon makers and a few other large consuming industries, but they are finding every year a growing business in miscellaneous products which contributes wonderfully toward keeping their capacity well employed. It is an evidence of diversification of interests which needs to be cultivated.

There have been rumors in commercial circles in London that the great oil wells of the Caspian are beginning to show signs of exhaustion, and this report has caused considerable uneasiness in Batoum. The English consul at that port says the rumor has undoubtedly arisen solely from the circumstance that, though the quantity of crude oil produced last year exceeded that of the year before by more than 1,250,000 tons, prices are rising. He says also that there are other important petroleum fields along the Caspian which will be available whenever the present district begins to fail, but that there are no indications of this contingency yet, since, besides the many still productive wells at Baku, there are three fountains at the place spouting with unabated force, and yielding daily the enormous quantity of more than 5000 tons.

A reckless inventor of a "fire escape," consisting of an aluminum steel tape, dropped himself 200 feet over the rocks at Niagara Falls and landed safely.

The Basic Open Hearth Process.*

BY N. KJELLBERG.

OPEN HEARTH FURNACES.†

Construction.—The capacity of the basic open hearth furnaces at the works visited varied within wide limits. It fluctuates from 6 to 20 tons, and is generally 8 to 12 tons. The largest furnaces are in the Department of the Loire, France, in the Rhenish Provinces, and in Upper Silesia, where 15 to 20 ton furnaces are quite frequent. The production of steel in the basic open hearth furnaces is growing rapidly and steadily, and it is a common occurrence to observe side by side older furnaces and more modern, larger furnaces in the same works. This is particularly true in Germany and in Austria-Hungary, where the basic method commands higher regard and where it may justly be said it is handled with great skill. In modern furnaces, which are considered the best, the air of combustion is allowed to enter at an angle sharply inclined towards the hearth, and the ports are placed above the gas ports, locating them directly under the arch. This arrangement calls for relatively high end walls of the furnace. The construction of the roof is not the same in all cases. Even furnaces built quite recently have their roof drawn down toward the bath and are provided with a horizontal crown. In the case of other furnaces the entire hearth is covered with an arched roof. In the latter case, the roof is so built that in melting down the work proceeds from the center outward and the hight of the roof is thus determined. The air and gas flues arising from the regenerators are often built side by side. At some works, however, the former are placed beyond the latter in the direction of the axis of the furnace. In the former case their number is four to five, two or three for the air and two for the gas between them. If the gas rises inside the air, it is either conducted into a flue of ample dimensions or into two or three ports placed side by side. In the latter case in modern furnaces the entrances are conducted in such a way that the gas issues from two ports drawn out laterally, above which the air enters through a single port across the entire width of the furnace. The arrangement in older designs is still to have the ports for gas and air simply continuations of the flues coming up from the regenerators. In these cases the air issues from one, two or three wide ports immediately above a similar number for the gas. Generally the regenerators are filled with closely placed brick, and it is only at one works that this work was arranged in a manner similar to that of the Whitwell stoves, with a large number of wide vertical flues, the idea being to avoid the drawbacks incident to a large quantity of tarry products. The furnace at this establishment, however, had only one regenerator on each side for the heating of the air of combustion, while the gas was brought direct from the producer into the furnace. Generally the regenerators lie below the furnace level. At three works their dimensions were: At one, 2.5 cubic meters for the air and 2.3 cubic meters for the gas per ton of capacity; at another, the figure was 1.7 cubic meters for gas and air each, and for the third, 1.4 cubic meters for each. Generally the regenerators for the air are larger than those for the gas. At one establishment, for instance, the increase is 25 per cent. So far as the size of

* A report of a visit to German, Australian and French works in 1888–89; papers in the *Jern Konterests Annaler*, 1889, No. 7. Translated for *The Iron Age* by Dr. Leo, of Coblenz, Germany.

† For simplicity's sake, the term Basic Material and Basic Process will be used to include neutral chrome ore and the neutral method.

the flue is concerned, regenerators equal in size have flues equal in size, and when the regenerators vary in size, the width of the flues is relatively proportioned.

The Basic Lining.—Those parts of the furnaces which are made of basic material are the hearth, the fire bridges, and the walls of the furnace, either for their entire hight or only for the lower part. In some exceptional cases the masonry between the gas and air ports are made up to a certain depth of basic material, as is also a part of the inner walls.

In a majority of works the hearth was stamped up partly of dolomite, lime or magnesia, and was partly walled up of magnesia brick. Generally the rammed hearth rested upon two or three courses of acid or basic brick and occasionally of both. Experience has taught that a stamped hearth on such a brick foundation is stronger and more durable than one without it. Thus, one establishment which at the time of my visit was using dolomite hearth rammed in intended in the future to put in a course of magnesia brick under the stamped material in order to guard against the tendency of the iron to work its way through.

If the dolomite or lime hearth is to be rammed in over a brick foundation, magnesia brick are either exclusively used in one or several courses or one course of acid brick is put in at the bottom above the iron plates. This is preferable on account of the low cost, when several courses of brick are to be employed. When the hearth is to be made exclusively of magnesite stamped in, then acid brick may be used as a foundation without any danger. Both combinations and the combination of acid and magnesia brick are employed in dolomite hearths. In building up a number of courses in the furnace it is varied with the thickness of the hearth, so that when the masonry has been put in the hearth it has a terraced appearance, the thickness ranging from two courses of brick at the tap pole to four at the opposite wall of the furnace. It is upon this foundation, after it has dried, that the hearth proper is stamped in either tar and dolomite, tar and lime or magnesia.

The fire bridges are always built of basic material. It is usual to put in a core of magnesite brick immediately upon the cooling ports and to stamp the hearth against this, so that the surface of the uppermost course of brick is uncovered and forms the fire bridge proper. If the hearth is made of magnesite, a core of acid brick may be walled up for the fire bridge and above it the mass be stamped in. The walls of the hearth were either built up of magnesite brick or stamped in of a mass of dolomite, lime or magnesite. In the majority of the works they were said to be built of hand made calcined tarred dolomite brick. Locally chrome ore masonry in large blocks was found at one of the works in conjunction with other basic materials for the other parts. When lime or dolomite is employed an intermediate layer of magnesite or chrome ore must be put in to separate them from the acid wall or roof. This isolating layer must not at any point be thinner than 3 to 6 centimeters. The points which determine the hight to which the walls must be carried up in basic material are that it must rise above, if possible, the level of the bath and that it must be high enough to avoid contact between the acid masonry and the thick boiling slag which always covers the charges melted down.

At the time of going to press our furnace reports are not numerous enough to allow of general deductions as to capacity at work. Some data bearing on the situation may be submitted, however. In New York, No. 1 Onandaga is nearly completed and will blow in before June 10. Niagara furnace went out on the 4th inst. In New Jersey, Wharton is ready to produce iron. In Pennsylvania, Cameron and one of the Cambria Iron Company's furnaces are out, while No. 2 Rockhill was banked on the 22d ult. In Virginia, No. 2 Longdale stopped for repairs on May 1 after a run of 164 weeks. The materials for the repairs, which will occupy three weeks, were all on the ground before the furnace was blown out. Among the charcoal furnaces we may note that Falling Spring will be started this month by Bonebrake, Burkhart & Co. In Maryland Muirkirk is banked. In the Hanging Rock region Jefferson and Scioto will resume in June and Mount Vernon on the 15th inst. Madison started on the 21st ult. In Michigan Antrim stopped on the 1st inst. to put in a new hoisting engine and tower. As soon as this work is completed, which it is estimated will be on the 15th, both stacks will be producing. In Wisconsin National is not now running. In Alabama Langdon was to have made its first cast on the 5th. Round Mountain is idle to put in a new hearth. On the whole, therefore, the changes thus far reported are not very significant.

OBITUARY.

J. W. SLOSS.

Col. J. W. Sloss, the pioneer iron manufacturer of Birmingham, Ala., died, on the 4th inst., of heart failure. He was about 70 years of age, and has done more probably to develop the South since the war than any man in it. He has built half a dozen furnaces, has developed dozens of coal and iron mines, and organized the Sloss Steel and Iron Company, second to the largest corporation in the South. He retired about a year ago, leaving his business in the hands of his three sons, and had been an invalid ever since. He had accumulated about a million and a quarter dollars.

CHARLES HICKOK.

Charles Hickok, late president of the Republic Iron Company, of Cleveland, was honored in memory by the directors, who passed appropriate resolutions, expressive of admiration for his virtues, of grief on account of the loss sustained.

DR. RYLAND T. BROWN.

In the death of Dr. Ryland T. Brown, on the 2d inst., at Indianapolis, the State of Indiana lost one of its most prominent scientists. His was a long and very busy life. He was born in Mason County, Kentucky, on October 5, 1807. While he was only one year old his parents removed to Clermont County, Ohio, remaining there until 1821. Here he attended the first free school established west of the Allegheny mountains. His family again changed its location to Rush County, Indiana. Four years afterward he began to study medicine in the Ohio Medical College, and began to practice in Connersville in 1832, his father having died seven years previous to that time. His studies were not confined to medicine, for he devoted much of his time to natural history. In 1843 he removed to Crawfordsville. Ten years later he was awarded a silver cup by the State Board of Agriculture as a premium for the best essay on drainage, and in the following year Governor Wright appointed him State Geologist. The Indiana coal fields were traversed by him, resulting in his prediction of great wealth under the crust of the earth. He was familiar with the coal strata. The accuracy of his locations has never been disputed. Wabash College conferred the degree of master of arts upon him. He went to Indianapolis in 1850 to accept the chair of natural science in the old Butler University, which was then known as the N. W. Christian University. This position he occupied for 13 years. Other positions which he occupied were chemist-in-chief in the Department of Agriculture, and professor of physiology in the Indiana Medical College. He has published a physiology for use in the common schools and was made president of the judges of the fourth group of food exhibits at the Philadelphia Centennial. From 1880 to 1885 he served as assistant State geologist. He had been a regular contributor to the *Indiana Farmer* for seven years. He was an earnest and devout member of the Christian church, filling the various offices and preaching on many occasions. For nearly 60 years he was one of the elders in the church.

Southern Iron Freights.

The East Tennessee, Virginia and Georgia system has issued a new rate sheet. Some of the rates went into effect on the 1st instant; others will be in force on the 8th:

To	From Chattanooga, Tenn.	From Anniston District.	From Bessemer District.	From Florence and Sheffield, Ala.
Altoona, Pa	$4.67	$5.17	$5.17	$5.27
Auburn, N. Y.	5.60	6.10	6.10	5 85
Bethlehem, Pa.	4.93	5.43	5.43	5.53
Buffalo, N. Y.	4.25	4.75	4.75	4.50
Chicago, Ill	3.75	4.25	4.00	3.75
Cincinnati, Ohio	2.25	2.75	2.75	2.50
Cleveland, Ohio	3.50	4.00	4.00	3.75
Columbus, Ohio	3.00	3.50	3.50	3.25
Conshohocken, Pa	4.52	5 02	5.02	5 12
Dayton, Ohio	3.00	3.50	3.50	3.25
Detroit, Mich	3.75	4.25	4.00	3.75
Elmira, N. Y.	5.35	5.85	5.85	5.60
Harrisburg, Pa.	3.61	4.11	4.11	4.21
Lancaster, Pa	4.06	4.56	4.56	4.66
Louisville, Ky.	2.25	2.75	2 50	2.25
Milwaukee, Wis.	4.15	4.65	4.40	4.15
Pittsburgh, Pa	3.90	4.40	4.40	4.15
Pottstown, Pa	4.52	5 02	5.02	5.12
Rochester, N. Y.	5.30	5.80	5.80	....
St. Louis, Mo.	3.00	3.25	3.25	2.80
Scranton, Pa.	5.02	5.52	5 52	5.62
Springfield, Ohio	3.60	3.50	3.50	3.25
Syracuse, N. Y.	5.45	5.95	5.95	....
Toledo, Ohio	3.50	4.00	4.00	3.75
Trenton, N. J.	4.80	5.30	5.30	5.40

The rates to some of the leading seaboard cities are as follows:

Rates on Pig Iron—Car Loads, 17½ Tons Min., Per Ton 2268 Pounds.

To	From Chattanooga, Tenn., and Birmingham.	From Anniston, Ala.	From Sheffield, Florence, and Decatur, Ala.	From Dayton, Tenn. Rockwood, Tenn.
Boston (rail and water), Mass	$4.50	$4.60	$4.71	$4 65
Providence (rail and water), R. I.	4.50	4.60	4.71	4.65
New York (rail and water), N. Y.	4.15	4.25	4.36	4.30
Philadelphia (rail and water), Pa.	4.15	4.25	4.36	4.30
Philadelphia (all rail), Pa.	4.55	4.65	4.76	4.70
Baltimore (rail and water), Md	4.00	4.11	4.21	4.16
Baltimore (all rail), Md.	4.25	4.36	4.46	4.41
Jersey City " N. J.	4.75	4.85	4.96	4.90
Wilmington " Del.	4.55	4.65	4.76	4.70
Washington " D. C.	4.25	4.36	4.46	4.41

The rates from the Birmingham District, including Bessemer, Ensley, Woodward, Thomas and North Birmingham, are subject to additional charge of $2 per car switching.

Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., May 6, 1890.

The Republican tariff managers in the House have concluded to made short work of tariff debate. The discussion is now scheduled to begin to-morrow for general speeches. This oratorical phase of the parliamentary features of the question will be shut off on Saturday. On Monday, May 12, the consideration of the bill by schedules will commence under the five-minute rule and run until Tuesday of the week following, when the previous question will be called, and on the following day, May 21, the vote will be taken. Chairman McKinley will lead off in the oratorical combat, followed by alternating speakers against and for the bill. If the parties desiring to be heard from who have enrolled their names on the Speaker's list were to take up the time of the House in delivering their utterances this part of the debate alone would run fully 60 days, as an ordinary daily session, exclusive of the usual parliamentary circumlocution, would not accommodate more than an average of two speeches. The *Congressional Record* and a motion granting "leave to print the gentleman's remarks" will economize the time of the House and give the people an opportunity to get their fill of tariff erudition pro and con at their leisure. Representative Bayne, of the committee, will speak with more particular reference to the metal schedule. This portion of the bill appears to give special satisfaction to the manufacturers interested. Although there has been some friction in other directions, the committee have had no complaints respecting the tariff on metals and manufactures thereof.

The debate in the Senate will consume more time, as that august body does not exercise the snap parliamentary practice of the House. The furnace committee are now at work on the House bill, supplemented by their own, in order to save time when the bill reaches their body. It will doubtless even then take several weeks to carefully go over the House bill, as it reaches them in official form. The Senate measure will differ from that of the House in some particulars, but it is not expected that the tariff ideas of the two Houses, as formulated in their respective measures, will be so far apart that they cannot reconcile them in committee of conference.

The most serious loss to the minority in the Senate is the death of their colleague, Mr. Beck, of Kentucky. They are left practically without a leader; Mr. Beck was not only a man of vigorous mental powers strengthened by experience, but was aggressive. He was familiar with the subject from his point of view, and in debate hammered away with stimulating example to his associates. He was one of the most industrious members of the minority on the Committee on Finance, and it was overwork during the long tariff session of 1888 which led to the first indications of his weakening powers of mental and physical endurance. It will be remembered that the late Senator was compelled to retire to Fortress Monroe for rest and recuperation, and while there wrote the minority report. He never engaged seriously in the labors of the Senate since. Therefore his death was simply the sudden culmination of constantly declining vitality. The most active member of the minority after Mr. Beck is Senator Harris, of Tennessee, but he is a poor parliamentarian, not a particularly bright debater and not so well versed in economic questions. The leadership of the Senate on the tariff on the side of the minority will be determined when the crisis arrives.

BIRMINGHAM NOTES.

The iron trade in this district has been very active during the week. May 1 a reduction in freight rates of 10 cents per ton to all Ohio and Mississippi River points went into effect. Taking advantage of this reduction, which may be only temporary, a number of large orders from Western points were shipped Thursday, Friday and Saturday. Several large shipments to Eastern points were also made during the week.

There has been a good demand for 60 days past, most of the sales being for immediate delivery, and stocks have been greatly reduced. The total amount of stock on hand in the Birmingham district, including iron in the storage warehouses, is placed at 40,000 tons. A large amount of this stock has been sold and will be shipped at once.

Manufacturers are selling freely, except for future delivery, an advance of 50 cents per ton or more being asked for July shipment. There is a general feeling of confidence in better prices during the summer, and continued demand.

The threatened labor troubles on May 1 did not occur. There were no strikes, no demand for higher wages and the labor situation will continue unchanged for another 12 months, unless something unforeseen occurs.

A considerable amount of Birmingham iron now goes to Boston. The Mary Pratt furnace recently shipped 200 tons of No. 2 foundry to one firm in Boston. It proved highly satisfactory and other orders will follow. The price has not been made public.

The local consumption of pig is increased 75 tons per day by the resumption of work at the Birmingham Rolling Mill. This mill has been idle since February on account of a strike, which was settled this week, both sides making concessions.

B. M. Long and associates are preparing to erect a 100-ton furnace and a 50-ton rolling mill at Jasper or Cordova, Walker County. Work will begin as soon as a site is selected and other details arranged.

Boston and New Orleans capitalists last week closed a trade for extensive coal properties in Walker County. They will open two or more mines during the summer.

The Jacksonville Land Company have about perfected arrangements for building a 100-ton furnace at Jacksonville.

The iron manufacturers of the Birmingham district have perfected an organization for mutual benefit and protection which will ultimately develop into a local iron exchange, it is thought. They have opened handsome offices in the city and weekly meetings are held. Thomas Siddon, president of the Sloss Iron and Steel Company, is president.

There is much local interest in the latest experiments of the Henderson Steel Company. This company own the patents of some process which, it is claimed, will make steel from the phosphorus ores of this district at small cost. While they claim a secret process, it is believed to be nothing more than the open hearth basic process. A new plant, with a capacity of 20 tons per day, has been built. Last week one run of ten tons was made. It was announced that a good quality of soft basic steel had been produced, but there seems to be some hitch which has shaken public confidence in the success of the experiment. There has been more or less secrecy about the experiment; still the stockholders appear confident and say they are only waiting to get everything properly adjusted to start up again.

D. M. WESTON, president of the American Tool and Machine Company, died at his home, 43 St. James street, Roxbury, Mass., Sunday, April 27, aged 72. Mr. Weston acquired much wealth and prominence by his invention of sugar machinery. His centrifugal machine for refining sugar is used almost universally. For about ten years he was in business in the Sandwich Islands, but a larger part of his business life has been spent in Boston. He was a member of the Shawmut Congregational Church. He had been president of the American Tool and Machine Company for the past seven years.

PERSONAL.

H. S. Albrecht, president of the Eagle Iron Works, St. Louis, Mo., has gone to Europe on an extended business trip.

George C. McCann, secretary os the Roanoke Rolling Mill Company, Roanoke, Va., has resigned.

Geo. W. Maynard has removed his offices to 31 Nassau street, New York.

Charles P. Treat, the contractor who is to build the railroad from the eastern terminus of the Nicaragua Canal to the Atlantic divide, has departed for Greytown with engineers and materials

George H. Earle, Jr., has been elected president of the Pennsylvania Warehousing Company.

Kenneth Robertson is now superintendent of the Secaucus Iron Company, at Secaucus, N. J.

F. S. Witherbee, of Witherbee, Sherman & Co., Port Henry, N. Y., will sail for Europe on the 17th inst., returning probably late in June.

W. L. Abbott, of Carnegie, Phipps & Co., is expected to return from Scotland this week.

Millard Hunsicker has resigned his position as assistant secretary and general agent of the Carbon Iron Company, and has accepted a position in the operating department of Carnegie, Phipps & Co.

J. Howard Roop has been elected president of the Chester Rolling Mill Company, at Chester, Pa. It is reported that Richard Peters, Jr., the secretary, will soon retire.

John Duthie, foreman of the steel ship construction department at the Herreshoff's Works, at Bristol, R. I., resigned his position April 29 to take charge of the construction of larger battleships at the Columbia Iron Works, Baltimore.

A. B. Heywood has resigned his position as treasurer of the Humphrey Machine Company, at Keene, N. H. He retains his interest in the concern, however.

R. P. Dillon, for some years with the firm of Carnegie, Phipps & Co., Limited, at Pittsburgh, in the capacity of general supply agent, has resigned his position to go to the Beaver Falls Mills of that firm as a resident partner of that branch. John A. Clark, chief clerk at the Lucy furnaces, has been appointed to succeed Mr. Dillon.

Thomas H. Stryker has been elected president of the Rome Locomotive Works, Rome, N. Y.

Wm. Atkins, who has been connected with the Reading Iron Works for the past 23 years, has accepted the position of superintendent of the rolling mill of the Pottsville, Pa., Iron and Steel Company.

E. P. Bullard continues the business of the Bridgeport Machine Tool Works, at Bridgeport, Conn., where all letters relating to such business should be addressed. All letters relating to the business of 62 College place and 72 Warren street should be addressed to 74 Cortlandt street, New York City, care of Cornelius Van Brunt.

TRADE REPORT.

Chicago.

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, May 7, 1890.

(*By Telegraph.*)

The carpenters' strike having been practically settled, the other labor troubles look less formidable. The molders' strike appeared serious at first, but the workmen were half-hearted in their support of it, and now only one works is affected. A great deal of business is in progress in the Iron trade, and the prospects for the future are improving all the time, but prices are no better and lower than they have been.

Pig Iron.—In Pig Iron a very fair run of orders has been booked since our last report. Sales have been made of good lots of Southern Coke, local Coke, Ohio Soft Iron and Lake Superior Charcoal. A round lot of Southern Mottled brought $14. Inquiries are very numerous from heavy consumers, who are now buying no more than will cover their immediate needs, and if they could satisfy themselves that prices will not go off again they would place large orders. This is the case to some extent also among consumers of Lake Superior Charcoal. A great deal of business is awaiting developments in the Iron trade. An indication of improving prices would precipitate a host of buyers on the market, while signs of weakness would drive them into retirement again, to order merely from hand to mouth. Quotations are as follows, for cash:

Lake Superior Charcoal	$21.00 @ $21.50
Local Coke Foundry, No. 1	17.00 @ 18.00
Local Coke Foundry, No. 2	16.50 @ 17.00
Local Coke Foundry, No. 3	16.00 @ 16.50
Bay View Scotch	17.00 @ 18.00
Am. Scotch (Strong Soft), No. 1	19.50 @ 20.50
Jackson County, Soft and Silvery, No. 1	18.00 @ 18.50
Southern Coke, No. 1	16.50 @ 17.00
Southern Coke, No. 2	15.50 @ 16.00
Southern Coke, No. 3	15.00 @ 15.50
Tennessee Charcoal, No. 1	20.00 @ 20.50
Alabama Car-Wheel	24.00 @ 25.00

Bar Iron.—The market is quite steady under the influence of heavy business past and prospective. Car orders still take the lead, but the season is now coming for the placing of yearly contracts by other consuming interests, and Bar Iron manufacturers are confident of bridging the interval. The local mills are nearly all full of work for 60 days, and a sale of Common Iron at 1.80¢, half extras, which was made to a large buyer last week, shows that the bottom has by no means dropped out. The Mahoning Valley mills quote 1.60¢, at mill, but local makers name 1.70¢ @ 1.75¢ as their range of prices on ordinary sizes. Small lots from store are 1.90¢ @ 2¢.

Structural Iron.—Manufacturers continue to report good business, but the Architectural foundries are very dull. The termination of the carpenters' strike, however, may help their trade considerably. Quotations on mill lots are as follows, Chicago: Beams, 3.20¢; Tees, 2.70¢; Universal Plates, 2.35¢; Angles, 2.25¢ @ 2.40¢. Small lots are quoted about one quarter of a cent per pound higher.

Plates, Tubes, &c.—Plates have been quite active from store, the trade having been stimulated by the cut in freight rates to Western points, causing orders to be placed now which would have been distributed over several weeks. Prices have been unsettled, and concessions are made from regular quotations according to the size of the order. Mills have evidently struck bottom in the cost of production, as they are quite firm at the low prices made some time since.

Sheet Iron.—The buying season has at last opened, and heavy orders are being placed with the mills. No. 27 Common Black is generally quoted at 2.85¢ @ 2.90¢, at mill, but some sellers have made even better terms to large buyers. Small lots from store quoted 3.30¢ for No. 27 Common and 62½% off for Juniata Galvanized.

Merchant Steel.—Trade is not very active, but inquiries are coming forward for 100-ton lots from the season buyers. It is in advance of their usual time and looks as though they proposed to feel the situation very thoroughly. Tire seems to be somewhat higher than it was last week, competition among sellers having been checked. Mill lots are quoted as follows, Chicago: Open-Hearth Machinery, 2.60¢ @ 2.75¢; Spring and Toe Calk, 2.75¢ @ 2.90¢; Tire, 2.35¢ rates. Bessemer Bars, 2.15¢.

Steel Rails.—In Steel Rails no transactions of any magnitude are reported. Inquiries are still being received for large quantities, and many more Rails will apparently be needed, but the railroads are holding off in the hope that prices may go lower. The local mills, however, are firm at $35, and believe that any change will be better and not worse. Splice Bars have been sold at 1.92½¢ for Iron; Steel quoted at 2.10¢ @ 2.25¢; Spikes, 2.05¢ @ 2.10¢; Track Bolts unchanged at 2.85¢ @ 2.90¢ for Hexagon.

Old Rails, &c.—In Old Iron Rails transactions have been quite light. Railroads ask $23 for small quantities, but dealers think $22 @ $22.50 should buy them. Of Old Steel Rails 200 tons, all lengths, sold at $19.75. Strictly short pieces probably worth $19, and long lengths $20. Old Car Wheels are more active at $19 @ $19.50, but most sales reported were for delivery outside of this immediate district.

Scrap.—Scrap sells in very small quantities. Railroad Wrought is in best demand, on account of large orders for Car Axles recently placed and others pending. Some ordinary No. 1 Forge was sold at $17.50, but most dealers ask $18, and are not disposed to sell much at that rate. We quote: No. 1 Railroad Wrought $18.50; No. 1 Forge $18; Pipes and Flues $12; No. 1 Mill, $14; No. 2 Mill, $9; Fish Plates, $20.50; Axles, $23.25; Machinery, Cast, $13; Cast Borings, $8 @ $8.50; Wrought Turnings, $13; Stove Plate, $10.50; Mixed Steel, $14; Coil Steel, $17.50; Leaf Steel, $18; Tires, $20; Horseshoes, $18.50.

Pig Lead.—Lead has been active and higher; 600 tons or more have been sold during the past week at prices ranging from $3.85 to $3.95.

Block, Pollak & Co., dealers in Old Railway material, have removed to rooms 67 to 69 in the same building, Commerce Building, on Pacific avenue, Chicago, to secure more commodious quarters, rendered necessary by the growth of their business.

Daniel G. Trench & Co., workers in Tin Plate, Metals and Cans, and agents for Canners' Supplies, Western agents of Charles S. Trench & Co., of New York and Baltimore, have removed from 89 Lake street to 31 Lake street, corner Wabash avenue.

Detroit.

WILLIAM F. JARVIS & Co., under date of May 5, 1890, say: While there seems to be very small stocks in consumers' yards, and considerable buying for prompt shipment, yet quite a number of buyers are holding off and not placing orders for future delivery. Several round lots of Lake Superior Charcoal have been disposed of to consumers who find they have used more Iron than they expected, and are buying now to tide them over to their regular time for placing their season contract, which is in June or July. The impression seems to be quite general among the furnacemen that the early buyers of Lake Superior Charcoal will obtain the best prices and terms. Southern and Ohio Irons are in moderate demand, but orders are mostly for one or two carload lots for immediate shipment. With a steady but not very active market we quote as follows:

Lake Superior Charcoal, all numbers	$21.25 @ $22.00
Lake Superior Coke, Bessemer	19.00 @ 20.00
Katahdin (Maine Charcoal)	25.00 @ 26.00
Lake Superior Coke Foundry, all ore	18.75 @ 19.50
Lake Superior Coke Foundry, cinder mixed	18.00 @ 19.00
Standard Ohio Blackband	18.75 @ 19.25
Southern No. 1	16.50 @ 17.00
Southern Gray Forge	14.75 @ 15.25
Jackson County (Ohio) Silvery	18.75 @ 19.25
Old Car-Wheels (nominal)	20.00 @ . .

St. Louis.

OFFICE OF *The Iron Age*, 214 N. Sixth st., ST. LOUIS, May 5, 1890.

Pig Iron.—The market continues in about the same condition as last reported. There is more uniformity in prices, and furnaces show less disposition to accept concessions from the prices which they are at present quoting. Most furnaces are well filled with orders, and can afford to take this stand in the matter. There are others, however, who have not been quite so fortunate in filling their order books, and it is only natural to suppose that these latter will be compelled to shade prices to some extent. The outlook is fairly encouraging, although it is difficult to see what there is in the immediate future to warrant a return of prices to those current during the last quarter of 1889. A gradual improvement is anticipated, but as the summer will soon be upon us, the advance will hardly be realized until the fall trade sets in. In the meantime, prices will undoubtedly hold their present position, and with any decided increase in demand a corresponding rise in values may be looked for. During the week under review sales have been numerous but of limited dimensions, indicating a hesitancy on the part of consumers to come into the market on the present basis of prices, which are as follows, for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry,	$16.00 @ $16.50
Southern Coke, No. 2 Foundry,	15.25 @ 15.75
Southern Coke, No. 3 Foundry,	14.75 @ 15.25
Gray Forge	14.25 @ 14.75
Southern Charcoal, No. 1 Foundry	18.00 @ 18.50
Southern Charcoal, No. 2 Foundry	17.50 @ 18.00
Missouri Charcoal, No. 1 Foundry	18.25 @ 18.75
Missouri Charcoal, No. 2 Foundry	17.75 @ 18.25
Ohio Softeners	18.75 @ 19.25

Connellsville Coke, f.o.b. East St. Louis, $5.65; St. Louis, $5.80.

Bar Iron.—There is some scarcity of orders and prices are not as firm as last week. Mills report a large amount of work in sight, and are only disposed to shade prices to tide them over the dull period now prevailing. Lots from mill are quoted at from 1.75¢ @ 1.80¢. Small lots from store are quoted at from 1.85¢ @ 1.90¢, according to circumstances.

Barb Wire.—There is an easier feeling in this department. The demand is only moderate, and as mills are looking for trade some low prices are made to secure orders. A large trade is expected from Colorado and that vicinity, but the uncertainty of freight rates, coupled with the downward tendency of prices, is a menace to any large trade from that section just at the moment. The following quotations indicate at what prices Wire can be

bought: Painted, 3.¢; Galvanized, 3.60¢. Carload lots 10¢ per cwt. less than above prices.

Chattanooga.

Office of *The Iron Age*, Carter and 9th Sts., CHATTANOOGA, May 5, 1890.

Pig Iron.—There seems to be quite a stiffening up of the market, both in the feelings of producers and consumers; the advance that has been reported during the last few days is fully maintained, and prices that were named a week or ten days ago it would be very difficult to get duplicated now. Iron is being shipped by the furnaces as fast as cars can be obtained. No orders are being taken for long time delivery, but the purchases for immediate shipment are very large, as much so as at any time during the year. The indications are quite strong that the prices of Iron will stiffen up considerably within the next 30 days. The inquiries that are being made certainly justify this remark. The amount of contracts that the furnaces could make if they would enter orders for long time delivery would simply be enormous, as the disposition to buy was never stronger than it is now; but the furnaces, as a general thing, decline to enter orders further than 60 days ahead. An item of considerable interest is in the disposition of the Southern railroad lines to largely increase their rolling stock, and contracts have been let by these lines aggregating over 10,000 cars. Work in the Southern foundries now amounts to a very great increase over last year, and it is quite justifiable to say that the foundries will consume this year more than double what they did last, and this independent of the several new foundries that are now being erected. The outlook for the production of Iron is certainly very encouraging, as is also the slight increase in prices.

Cincinnati.

Office of *The Iron Age*, Fourth and Main Sts., CINCINNATI, May 7, 1890.

(By Telegraph.)

Pig Iron.—Representatives of large Southern furnaces who have been in the habit of indulging in active competition for orders, which circumstances seemed to justify, if not to make wholly desirable, have virtually suspended trade since the 1st of the month, there being few large orders in sight worthy of a determined effort to secure. Yet several transactions of moment have passed through the hands of local factors, and the flow of small sales has been steady and liberal in the aggregate, being upward of 10,000 tons during the last five days. While there is no quotable change in prices there has been a strengthening tendency, Southern producers as well as Northern stacks exhibiting a firmer if not a more confident disposition. Factors who have taken orders upon their own responsibility have found greater difficulty in placing the same with furnaces which heretofore have been ready to accept all such offers. A well-filled order book has placed producers in a more independent position. The temper of buyers, however, appears to have altered but little. While ready to contract for supplies for summer and fall deliveries upon the inside prices of a week or two ago, they show little inclination to follow the market to a higher level. Few developments have been made having a direct bearing upon the market for Pig Iron, but it is asserted that the element of uncertainty in the labor outlook has a retarding influence upon consumers, as the new phases of the labor question certainly modify the views of capitalists. The only sales here of magnitude during the week may be mentioned—2500 tons Gray Forge and Mottled on the basis of quotations for three months' delivery, and 2000 tons Gray Forge and No. 3 Foundry also at quotations. Some liberal sales of Lake Superior Iron have been made at Ohio lake points at about $20 cash, in which Cincinnati had some interest but did not participate in the actual sales. Reports were current here that the iron had been sold 25¢ @ 50¢ less than quotations, but they were not verified. At the close the outside quotations more nearly represent the trading basis. Prices are without quotable change as follows:

Foundry.	
Southern Coke, No. 1	$14.75 @ $15.00
Southern Coke, No. 2	14.25 @ 14.50
Southern Coke, No. 3	13.50 @ 14.00
Ohio Soft Stone Coal, No. 1	16.50 @ 17.00
Ohio Soft Stone Coal, No. 2	15.50 @ 16.00
Mahoning and Shenango Valley	16.50 @ 17.00
Hanging Rock Charcoal, No. 1	20.00 @ 22.00
Hanging Rock Charcoal, No. 2	18.50 @ 19.00
Tennessee and Alabama Charcoal, No. 1	17.20 @ 18.50
Tennessee and Alabama Charcoal, No. 2	18.00 @ 18.50
Forge.	
Gray Forge	13.25 @ 13.50
Mottled Neutral Coke	12.75 @ 13.00
Car-Wheel and Malleable Irons.	
Southern Car-Wheel	22.50 @ 23.25
Hanging Rock, Cold Blast	21.50 @ 24.25
Lake Superior Car-Wheel and Malleable	20.00 @ 21.00

Louisville.

LOUISVILLE, KY., May 5, 1890.

The market is quiet, with little buying for immediate delivery, and sales confined largely to deliveries running through the year, and in some instances beginning in July and August. There are inquiries for Iron to be delivered through 12 months, beginning May, and offers have been accepted on this basis. Buyers find in some instances that they can purchase on basis of $11.50 for No. 2 Foundry at furnace. This seems to be the minimum price, however, and no sales of this grade are reported at lower basis. Sales in round lots, basis of $13 for Close Silver Gray, and $14 for No. 2 Foundry running through the year, have been made during the week. The encouraging feature is the report of manufacturers that they have plenty of work, and shall use a large amount of iron, so that the furnaces' offerings will readily find a place for their product, but not at an advance over prices ruling the last two weeks for some time to come, as heavy purchases have placed the majority of buyers in a position to resist a much higher range of values. We quote:

Southern Coke, No. 1 Foundry (new classification)	$14.50 @ $14.75
Southern Coke, No. 2 Foundry (new classification)	14.00 @ 14.25
Southern Coke, No. 3 Foundry (new classification)	13.50 @ 13.75
Gray Forge	13.00 @ 13.25
White and Mottled, different grades	12.25 @ 12.50
Silver Gray, different grades	13.00 @ 14.00
Southern Charcoal, No. 1 Foundry	17.00 @ 18.00
Southern Charcoal, No. 1 Mill	15.75 @ 16.75
Southern Car-Wheel, standard brands	22.50 @ 23.00
Southern Car-Wheel, other brands	18.50 @ 21.00
Hanging Rock Coke, No. 1 Foundry	16.75 @ 17.00
Hanging Rock Charcoal, No. 1 Foundry	20.00 @ 21.00
Hanging Rock, Cold Blast	22.00 @ 24.00

Cleveland.

CLEVELAND, May 5, 1890.

Iron Ore.—The market itself is without special feature. An immense amount of new Ore is being received, and from 25,000 to 30,000 tons of last season's Ore is being sent forward to the furnaces every week. Transportation rates from Lake Superior mines to lower lake ports have declined to 90¢ from Escanaba; $1.15 from Marquette, and $1.25 from Two Harbors and Ashland. There is just at present slight inquiry for new Ores, and certainly no disposition on the part of the Ore men to shade prices. About 54,000 tons of new Ore were unloaded on the local docks during the past seven days.

Pig Iron.—There have been no changes in prices, but there is a decidedly firmer feeling all around, and inquiries are certainly more numerous than for several weeks. There is a demand for Iron for July and August delivery, but furnacemen seem disinclined to make contracts extending into the future at losing prices. It is believed that the reaction cannot be very much longer delayed. Following are the quotations announced to-day.

Nos. 1 to 6 Lake Superior Charcoal	$21.00 @ $22.00
Nos. 1, 2 and 3 Bessemer	18.50 @ 19.50
No. 1 Strong Foundry	18.30 @ 19.30
No. 2 Strong Foundry	17.30 @ 18.30
No. 1 American Scotch	17.80 @ 18.30
No. 2 American Scotch	16.80 @ 17.30
No. 1 Soft Silvery	17.50 @ 18.50
Mahoning and Shenango Valley Neutral Mill Irons	16.30 @ 16.80
Mahoning and Shenango Valley Red Short Mill	16.80 @ 17.30

Scrap Iron.—There is very little demand for Old Material. A single sale of Old American Rails at $24 is reported, but mill men do not seem disposed to purchase old material.

Nails.—Prices have declined another notch, Steel Wire Nails now being quoted at $2.50; Steel Cut Nails at $2, and Steel Cut Spikes at $2.25.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., May 6, 1890.

Pig Iron.—There is no change of any importance in this department. The demand for small lots is pretty good, and for such brands as consumers like there is not much difficulty in making sales. Large lots, however, are not sought for, and it would be no easy matter to place anything beyond just such quantities as the buyer might require. As a rule, holders are not inclined to force matters, for the simple reason that such a course would only depress the market without leading to any material increase of business. In other words, what people want they are willing to take, but beyond that it is almost impossible to get them to go. The supply is not very excessive—it is more than there is a demand for—but the accumulation at furnaces is not such as should cause serious alarm. A little increase in the demand and a slight decrease in the supply would soon result in a better feeling—and both these factors are likely to be met with before long. But when the market once gets started it usually goes further than expected, and while it is reasonably certain that prices cannot be much lower, the reaction may not come until toward midsummer or perhaps after that date. Something will be necessary to get the trade out of the lethargy into which it has fallen, and how soon that will be, or what it will be that will do it, remains to be seen. Sales during the week have been chiefly at $15.50 @ $16, delivered, for good Gray Forge; $17 for No. 2 Foundry, and $18 @ $18.50 for No. 1 Foundry. These prices are obtainable only for desirable brands, and for such quantities and deliveries as buyers choose to designate. Outside brands and some Southern brands have been, and are still offered at materially lower figures, but without attracting offers acceptable to holders. Buyers talk $14 50 for Gray Forge, and $16 @ $16.50 for No. 1 Foundry, but sellers are about 50¢ higher, and not much disposed to make further concessions, although in some instances it is thought a firm offer from the right kind of party might secure a few thousand tons. On the whole, however, although dull, the market is pretty steady, and last week's prices fairly maintained.

Bessemer Pig.—The position is just about as stated two weeks ago. Nobody seems particularly anxious to buy, and no one is anxious to sell. All the Bessemer made goes directly into consumer's hand-

and as contracts run pretty well on to the close of the year, present conditions may continue for some time, although it is believed that sooner or later the demand will lead the supply, in which case higher prices will naturally follow. At present $20 @ $20.50 at furnace is quoted for standard, and $23 @ $23.50 for high grade Bessemer.

Spiegeleisen.—Nothing doing in this market. There are sellers at $32, duty paid, for 20%, but buyers make no response.

Ferromanganese.—No demand, so that quotations are nominal at $80 @ $82 duty paid for 80 %.

Steel Rails.—The dullness noted for some time past continues without any sign of intermission. Some demand is reported from the West, but it is impossible for Eastern mills to secure any part of the business unless at a material reduction in prices. Buyers intimate that they are offered rails at $32 at mill, and while nominal quotations are about $1 higher there is little doubt that desirable orders would be accepted at the figure named. Prospects at the moment are not encouraging, and some well informed parties are figuring on still lower prices before large orders are given out.

Steel Billets.—Market dull, weak and lower. Nominal quotations are from $29.50 to $30, delivered, but in some cases $29 has been named without attracting business. Buyers talk $28 @ $28.50, delivered, but actual business has not been reported recently.

Blooms.—Demand very light and prices more or less nominal. Blooms at about $52 @ $53 "℔ Bloom ton" for Hot Blast Charcoal, and $54 @ $55, delivered, for Cold Blast; Runout Anthracite, $44 @ $45, and Scrap Blooms, $35 @ $36, delivered in consumers' yards.

Muck Bars.—There is a little more inquiry, and several sales have been made at from $28.50 to $28.75, delivered. Buyers can be found for large lots at about 50¢ less money, but after the many concessions recently granted sellers feel like calling a halt. Buyers are equally stubborn, so that at this writing bids and offers are as above stated.

Bar Iron.—Market very dull. There is a fair amount of business in small lots, but mills are all more or less in want of orders, so that there is a constant competition for any new business that may be offered. This necessarily implies unsettled prices, varying, according to circumstances, from 1.80¢ to 1.90¢ for best refined Iron, and from 1.65¢ to 1.75¢ for common and medium qualities.

Skelp Iron.—A few small sales are reported at 1.80¢ @ 1.85, delivered, for Grooved, and 1.95 @ 2.05¢ for Sheared. There is a probability of an improving demand in the near future, but buyers talk low prices.

Plates.—There is a moderate demand for small lots, but beyond that there is not much to be said. Prices are steady, and for such quantities as buyers are willing to take quotations are pretty well maintained, but on orders for several hundred tons liberal concessions have been offered. Prospects are not materially different to what they have been for some weeks past—viz., a good deal of business under consideration, but somewhat indefinite as to when it will result in actual orders. Ordinarily lots delivered in consumers' yards are quoted about as follows:

	Iron.	Steel.
Heavy Plates	2.05 @ 2.10¢	2.25 @ 2.35¢
Tank	2.10 @ 2.15¢	2.40 @ 2.50¢
Bridge Plate	2.10 @ 2.15¢	2.30 @ 2.40¢
Shell	2.40 @ 2.50¢	2.70 @ 2.80¢
Flange	3.00 @ 3.15¢	3.00 @ 3.10¢
Fire-Box	3.75¢	35.7 @ 4.25¢

Structural Material.—The demand is of a somewhat desultory character, and in the aggregate not equal to the current output. There is no reason to expect any serious falling off, however, as all the leading interests, such as bridge and shipbuilders, are very well employed. The same may be said of the architectural and building trades generally. So that while there is a temporary dullness, it is likely enough to give place to renewed activity at an early date. Prices are about 2.20¢ @ 2.25¢, delivered, for Sheared Plates; 2.20¢ @ 2.25¢ for Angles, with 15¢ @ 20¢ more for the same in Steel. Tees, 2.6¢ @ 2.7¢; Beams and Channels, 3.1¢ for either Iron or Steel.

Sheet Iron.—The demand is quite up to the average for the season, and in some cases a little beyond that. Prices are steady, and for carload lots are quoted as follows:

Best Refined, Nos. 14 to 20	3.00¢ @ 3.10¢
Best Refined, Nos. 21 to 24	3.20¢ @ 3.30¢
Best Refined, Nos. 25 to 26	3.40¢ @ 3.50¢
Best Refined, No. 27	3.50¢ @ 3.60¢
Best Refined, No. 28	3.60¢ @ 3.70¢
Common, ¼¢ less than the above.	
Best Soft Steel, Nos. 14 to 20	3¼¢ @ 3½¢
Best Soft Steel, Nos. 21 to 24	3⅝¢ @ 3¾¢
Best Soft Steel, Nos. 25 to 26	3¾¢ @ 3⅞¢
Best Soft Steel, No. 27	4¢ @ 4⅛¢
Best Bloom Sheets, 1-10¢ extra over the above prices.	
Best Bloom, Galvanized, discount	60 %
Common, discount	62½ %

Old Rails.—Business is practically dead so far as this market is concerned. There are neither buyers nor sellers, so far as we can find. A few small lots are reported as sold, delivered at interior points, at $23 to $23.50 in consumers' yards. But price depends a good deal on whether the party is a buyer or a seller. One without the other being at hand would easily make a difference of 50¢ to $1 ℔ ton.

Scrap Iron.—There is a somewhat better demand, but prices are still unsettled, and in some cases rather weak. Asking price about as follows, according to quantity, quality, &c., say: No. 1 Wrought, $22 @ $23 Philadelphia, or for deliveries at mills in the interior, $22.50 @ $23.50; $16 @ $17 for best Machinery Scrap, $15 @ $15.50 for ordinary, $16.50 @ $17 for Wrought Turnings, $11 @ $11.50 for Cast Borings, and $26 @ $28 for Old Fish-Plates, and $18 @ $19 for Old Car-Wheels.

Wrought Iron Pipe.—The demand is gradually increasing, and mills are all fairly supplied with orders. Prices are firm. At the meeting of manufacturers held in New York last week discounts were reaffirmed as follows: Butt-Welded Black, 47½ %; Butt-Welded Galvanized, 40 %; Lap-Welded Galvanized, 47½ %; Lap-Welded Black, 60 %; Boiler Tubes, 1¼ inches and smaller, 45 %; Boiler Tubes, 2 to 4 inches, 50 %; Boiler Tubes, 4½ inches and larger, 52½ %; Oil Well Casing, 50 %.

The firm of Tuttle, Oglebay & Co, have been dissolved, and will be succeeded in the Lake Superior Iron Ore business by E. W. Oglebay, D. Z. Norton and L. B. Miller, under the firm name of Oglebay, Norton & Co., Wade Building, Cleveland.

The controlling interest in the Iron Cliff's Company having been purchased by the stockholders of the Cleveland Iron Mining Company, the following directors have been elected: Samuel L. Mather, president; W. G. Mather, vice-president and treasurer; J. H. Sheadles, secretary. The company produces the Barnum Red Specular, the Cliff's Shaft Red Specular, the Salisbury Bessemer and the Salisbury Non Bessemer, both soft hematites. The company also makes the Pioneer Charcoal Iron from the above ores, mixed with Foster Hematite. Pickands, Brown & Co., of Chicago, and Pickands, Mather & Co., of Cleveland, have been appointed sole agents for the "Pioneer" Pig Iron.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, May 6, 1890.

Pig Iron.—There has been a considerably increased volume of business the past week, but no improvement in prices; indeed, some grades show a decline of from 25¢ to 50¢ ℔ ton. Sales of some 7000 to 8000 tons of Forge Irons have been reported during the week under review, mostly for May and June delivery, all at $15 cash, which is now the ruling price for standard brands. Sales of Southern Forge were made at $14.50. So far as we can learn furnacemen in this district are not disposed to contract beyond June at present prices; indeed, some of them are refusing to sell for any delivery at current rates. The latter, however, are still working on contracts made several months ago, when prices were much better than they are at present, and they are in hopes that by the time they are through with what they have on hand the market will be in better condition than it is at present. This market is no better now than it was a year ago. It is true Forge Iron was not worth as much then by a $1 ℔ ton, but the cost of production is much greater now, and will be still more increased when this year's Ores come into use. It is intimated in some quarters that the Oremen will take compassion on the furnacemen and reduce the price of Ore, but this is not probable. It is said that speculators are beginning to feel around again with a view to buy, but they are not meeting with much encouragement from furnacemen generally. Some of the latter declare that they will not sell to speculators, whom they hold in a very large degree responsible for the present unsatisfactory condition of the market. The trouble with the speculators is that they are very timid, easily frightened and commence dumping at the very time they should hold off. They were largely responsible for running the market up higher than it should have been, and then they were the first to sell it down. However, furnacemen are a good deal like other men—they will sell to whoever offers the best price and has the necessary wherewithal to pay for the material. We quote ruling prices as follows:

Neutral Gray Forge	$14.50 @	$15.00,	cash.
All Ore Mill	15.50 @	16.00,	"
White and Mottled	13.75 @	14.25,	"
No. 1 Foundry	17.00 @	17.25,	"
No. 2 Foundry	16.25 @	16.50,	"
No. 3 Foundry	15.75 @	16.00,	"
No. 2 Charcoal Foundry	21.50 @	22.00,	"
Cold-Blast Charcoal	25.00 @	30.00,	"
Bessemer Iron	17.00 @	17.50,	"

There have been no sales of Bessemer, but we are reliably informed that it is being offered as low as $17 cash, although some furnacemen are refusing to sell under $17.50.

Muck Bar—Continues very dull, and prices are weak and drooping; we now quote at $26.50 @ $27.00, cash. There was a sale of 500 tons on Saturday at $26.50. Some of our city mills are refusing to sell at prices quoted, but consumers have no trouble in supplying themselves.

Ferromanganese.—The last sale of domestic 80 % Ferro reported was at $86, cash, showing a further decline of $2 @ $3 ℔ ton. Several small sales of 80 % foreign, at $80 @ $80.50, at seaboard, equal to $82.50 @ $83 Pittsburgh. For future shipment foreign has been offered as low as $77 at seaboard.

Manufactured Iron.—Business, while fair, is not what it should be; labor troubles and unfavorable crop reports have contributed largely to this condition, and then many orders, we have no doubt, are being held back in anticipation of lower prices. Prices continue weak in sympathy with raw materials, and desirable orders are in demand, hence there is a dis-

position to cut close. Bars may be quoted at 1.75¢ @ 1.85¢, 60 days, 2 per cent. off for cash according to quality, character of order and delivery. Plate Iron, 2.15¢ @ 2.25¢; No. 24 Sheet, 2.80¢ @ 2.90¢; Skelp, 1.75¢ @ 1.80¢ for Grooved, and 2.05¢ @ 2.10¢ for Sheared.

Structural Iron.—There is an increasing inquiry, which we hope will result in an increased activity before long; as usual, the mills making a specialty of this kind of iron are pretty well employed. Prices continue easy, but the only change we make is a slight reduction in Angles, which we reduce from 2.30¢ @ 2.25¢. Beams and Channels, 3.10¢; Sheared Bridge Iron, 2.80¢; Universal Mill Plates, 2.40¢; Refined Bars, 1.92 @ 2.¢.

Merchant Steel.—No change whatever in prices. Tool Steel, 8¢ and upward, as to quality; Crucible Spring Steel, 4¢; Open Hearth Steel, base sizes, 2¼¢; Bessemer Machinery, 2.35¢; Tire Steel, 2.50¢.

Steel Plates.—There is a continued demand reported, but no change in prices, with the exception of a slight reduction in Tank. Fire Box, 4¼¢ @ 4¼¢; Shell, 3¢; Flange, 3.15¢ @ 3.20¢; Tank, 2.80¢.

Wire Rods.—There appears to be no improvement in the demand and no change in prices, which we continue to quote at $42 @ $42.50, cash, gross ton. As stated in our last report there has been a decline of $9 @ $10 ₱ ton within the past three or four months. Never before was there such a decline in the same length of time.

Nails.—There is no improvement to note in the Nail trade so far as this market is concerned, and reports from Wheeling and other points of production west of here are of a most unsatisfactory character. Demand continues exceedingly light and prices irregular and unremunerative. Steel Cut Nails are still quoted at $1.90, 60 days 2 % off for cash, but it is intimated that they can be bought for less. Wire Nails remain as quoted a week ago, $2.30 @ $2.35. (In our report of last week we were made to quote at $2.20 @ $2.35, instead of $2.30 @ $2.35—an oversight of the proof-reader.)

Wrought Iron Pipe.—There is a continued fair degree of activity. Mills generally are busy, but none of them to say crowded. The regular monthly meeting of the association took place at New York last Wednesday, but there was no change made in prices, as predicted in our last report. Discounts on Black Butt Weld, 47½ %; on Galvanized do., 40 %; on Black Lap Weld, 60 %; on Galvanized do., 47½ %; Boiler Tubes—1¾-inch and smaller, 45 %; 2 to 4-inch, 50 %; 4-inch and larger, 52½ %; Casing, all sizes, 50 %. (Mr. Campbell B. Hernon, of Shang, Chalfant & Co., one of the best men in the Pipe business, has been seriously ill for several weeks past, but is thought now to be in a fair way for recovery. Mr. Hernon was at one time president of the Wrought Iron Pipe Association.)

Billets and Slabs.—The demand for Bessemer Steel Billets and Slabs continues light, and prices weak and irregular; we quote at $27 @ $27.50, and, so far as we can learn, there have been no sales made here under $27. Wheeling is said to be offering at $26.50 on cars there, and while the cost of transportation shuts Wheeling out of this market, the freight rate is the same from there East as it is from Pittsburgh.

Old Rails.—There has been but one sale of Old Iron Rails reported during the week and it was at $24.25; may be quoted at $24 @ $24.50. These quotations are for Standard Rails. Mixed lots are selling for less. The supply is light, and this accounts for the fact that they are holding up in value better than any other article in the Iron line. There have been none made for a number of years in this country. Old Steel Rails remain about as last quoted; $21 @ $22 for short and long lengths.

Steel Rails.—So far as we can learn there has been but little new business placed here during the past week, while some of the mills are pretty well sold up and indifferent about taking additional contracts at the prices. Others not so well situated are taking all the business they can get. It is known that orders have been placed here at equal to $31 on cars Pittsburgh, but small lots for immediate delivery are still quoted at $32 @ $33.

Railway Track Supplies.—Business in this line is still reported slow for this season of the year, and prices are weaker and irregular. Spikes are still quoted at 2.10¢, 30 days, on cars here, and 2.20¢ delivered at Chicago and St. Louis; Splice Bars and Track Bolts are still quoted as a week ago, but for a desirable order slight concessions would probably be made.

Old Material.—There appears to be rather more inquiry, but prices are no better. Sales of No. 1 Wrought Scrap at $20, net ton; Cast Scrap at $15 gross; Car Axles, $29 gross; Car-Wheels, $18.50 @ $19 gross; Steel Blooms and Rail Ends, $20 @ $20.50 gross; Leaf Steel, $23 @ $23.50.

(*By Telegraph.*)

There has been nothing new developed in the general Iron or Steel situation during the past two days. Trade continues slow, with a continued feeling of uncertainty, and while hopes of a change for the better soon are entertained, the outlook in some respects is not as promising as it might be.

New York.

Office of *The Iron Age*, 66 and 68 Duane street, NEW YORK, May 7, 1890.

On the whole, taking the entire range of the market, the Iron trade in this section remains very dull, and with very few exceptions prices along the line still exhibit a drooping tendency. There are some indications in some lines that buyers are coming into the market with a little more confidence, but generally they expect concessions below the prices quoted. A good many in the trade who were persistently sanguine until lately now avow that they see nothing to justify the expectation of a notable recovery until toward the close of the summer. The majority of sellers now look forward to a dragging market for some time to come.

American Pig.—Some sellers report a somewhat improved demand in moderate lots, but usually buyers expect to do better than sellers are willing to name, and occasionally they withdraw from the market. Some of the leading Southern companies have advanced their asking prices, having for the present booked sufficiently large orders for the future. For No. 1 Southern $16.75 @ $17 is now the ruling price, while No. 2 Foundry is quotable at $16.25 @ $16.50; Northern Irons range from $18 @ $19 for No. 1 and $17 @ $17.50 for No. 2 Foundry. Four large Eastern Malleable Iron works are in the market for about 17,000 tons of Charcoal Pig, on which sellers quote on the basis of $20.50 at Buffalo for Lake Superior, for delivery during the season of navigation.

Steel Rails.—Rumors of low prices named are very numerous, reports from good sources stating that $32 at Eastern mill has been slightly shaded in recent transactions. The business is light, however, and $32.50 @ $33 is freely quoted, the latter for small lots. At tidewater $33 has been named, which would be $32 @ $32.25, according to location of mill. Pittsburgh mills give sales aggregating about 10,000 tons, and quote from $32 @ $34. A good deal depends upon the time of delivery, some of the mills East and West being well booked up to July, while others are ready to make deliveries earlier. The Chicago mills are reported to have booked very heavily during the past few weeks and are said to be well supplied with orders into midsummer. Some large matters are still coming up. Thus a contract for 800 miles of road was let recently between Sioux City and Ogden, and the Manitoba is contemplating extensions. In the South one large order is expected to appear in the market at an early date. The Canadian roads are reported to have placed about 30,000 tons in England, the American mills losing the business.

Spiegeleisen and Ferromanganese.—The market is very quiet, no sales of Spiegeleisen of any consequence having taken place during the week. We quote nominally $31.50 @ $32. In Ferromanganese there are occasional sales of spot and quick delivery at $83 @ $85, while futures are generally held at $78 @ $80, with rumors of offers as low as $77.

Billets.—The low prices made at Wheeling, $26.25 @ $26.50, have an unsettling effect, since Western makers continue to offer in the West at equivalent prices, the freight being $2.60, making the price delivered a shade under $29.

Wire Rods.—There is a moderate inquiry, with prices East of the Alleghenies quoted $44 @ $45.

Structural Material.—We quote: 2.15¢ @ 2.20¢ for Plates, 2.20¢ @ 2.25¢ for Angles, 2.5¢ @ 2.6¢ for Tees and 3.1¢ for Beams and Channels.

Plates.—We quote: Steel Shell, 2.7¢ @ 2.75¢; Tank, 2.35¢ @ 2.4¢, and Flange, 2.3¢ @ 3.1¢, delivered, with Iron ranging two to three tenths less.

Merchant Steel.—We quote: Machinery, 2.05¢ @ 2.15¢; Toe Calk, 2.10¢ @ 2.15¢, rates, and Tire 2.05¢ @ 2.10¢, rates.

Fastenings.—We quote $2 @ $2.10, delivered, for Spikes and 1.75¢ for Steel Angles.

Old Rails.—One of the trunk lines has during the week sold about 10,000 tons of Old Rails, the price realized being given at $24.

Old Steel Rails.—The situation is peculiar in this respect. Small lots can be picked up, from time to time, for mixed length at $19 @ $20, sales having been made at that range. Larger lots are being held at much higher prices, as high as $21.50 being asked. Comparatively few Old Steel Rails are coming up just now. It is stated, however, that in a month or two the supply will be relatively large.

Financial.

The general outlook has improved. Several important tariff changes are announced in the schedules of Western railroads. The outlook for spring wheat is encouraging. Business changes include the retirement of David W. Bruce, of Geo. Bruce's Son & Co., whose type foundry has a history dating back to 1813. It is understood that the subscriptions for stock in the H. B. Claflin Company, which goes into existence on June 15, are greatly in excess of the required amount, and consequently many applicants will be disappointed. The wheat and breadstuffs markets are excited and irregular. Cotton advanced $\frac{1}{16}$¢, and some advanced prices were made on cotton goods. It was easoned that the passage of the Silver bill would have a special bearing on the cotton industry, as in fact upon all agricultural products. During the week the predicted labor troubles of May 1 have culminated, and though the end is not yet, fears of general disturbance in the various trades are sen-

sibly diminished. Silver legislation has received at least a temporary quietus from the unyielding positions assumed by the irreconcilables of either party. Secretary Windom denies that he favors a contraction of the currency, and endeavors to show by an array of statistics that the present circulation in the United States is $22.36 per capita, not including any portion of the amount held by the Treasury, or more than in any of the leading countries of Europe, with the exception of France. The weekly payment bill affecting corporations passed both branches of the New York Legislature, but the enforcement of its regulations is supposed to be impracticable. The bill increasing the scope of savings bank investments was lost in the Assembly.

The labor demonstration of May 1, intended to inaugurate an eight-hour day, was attended with no untoward event. The demands of the carpenters in New York and Chicago were generally conceded. The outlook and possibilities of the movement as concerns the various trades it might be difficult even for the leaders to state with any degree of precision, but in the end natural laws are sure to govern.

In the stock market the bullish feeling has been in the ascendant, attended with large transactions. On Monday alone no less than 420,000 shares changed hands, the largest total yet for any single day. The advance was materially aided by easy money in London, and the better feeling in all large monetary centers when it became evident that labor agitation threatened no serious disturbance. One of the features was the announcement that negotiations are in progress for the purchase of the Alton and Terre Haute Railway to the Cleveland, Cincinnati, Chicago and St. Louis Railroad for $10,000,000. From Boston it was reported that there would be a liquidation of the Oregon Transcontinental Corporation at an early date. The most active stocks were the Northern Pacific, Oregon Transcontinental, Louisville and Nashville and the grangers. There was also good buying of Chicago Gas, Atchison, Topeka and Santa Fe, Union Pacific, Pacific Mail, and the Missouri, Kansas and Texas Trust stocks shared in the general activity. Railway mortages, too, were in demand.

United States bonds were quiet, and at times there was no sale. Quotations are:

U. S. 4½s, 1891, registered	102⅜
U. S. 4½s, 1891, coupon	103½
U. S. 4s, 1907, registered	122
U. S. 4s, 1907, coupon	122
U. S. currency 6s, 1895	116

The weekly bank statement showed a decrease of $204,500 in surplus reserve, which was in strong contrast with the heavy gain in the previous week. The surplus is now $3,129,000. Loans were expanded $782,800. Deposits increased $159,400. The money markets have been more sensitive at higher rates, ruling about 4½ % @ 5 %, as a result of active speculation. Time money is quoted 4½ % for four months and 5 % for eight months on approved collateral. Commercial paper quiet. The best double name paper is quoted at 5½ % @ 6 %, and prime single name at 6 % @ 7 %. In Chicago the demand for money at the banks is exceptionally heavy, and is well distributed among all classes of borrowers.

Foreign exchange was firm, and one of the Canadian banks advanced posted rates ½¢, to 4.85½¢ and 4.87½¢.

Bar silver in London was steady at 46¾d ℔ ounce. Silver certificates here were weaker. The London *Economist* is anticipating no speedy decline in the bank rate of discount. Gold is wanted for the Argentine Republic, and the Russian Government may transfer its balance in London to France, where the dealing in Russian securities now centers.

A brood of bank failures which occurred in Philadelphia and vicinity during the past week affords another striking example of pernicious financiering. Beginning with the Bank of America and extending to Atlantic City, Gloucester and Camden, and followed by the collapse of the Montgomery Insurance Trust and Safe Deposit Company, of Norristown, a feeling little short of consternation spread among numerous small depositors, who are the principal parties affected. Respecting the Bank of America the Philadelphia *Press* says: "Its resources were chiefly obtained by opening branches and drawing in by the offer of interest both deposit and savings accounts—two branches of banking which can never be combined without danger. By opening these branches scattered over the city, by seeking business through allied, if not connected, enterprises, a very pretty sum was drawn together," and as appears from subsequent developments used almost entirely in floating the speculative projects of a single promoter. One of the trust companies had not even paid for the safe in which their funds were deposited. Although the effect of these disclosures is local, confidence is impaired where no substantial reason for it may exist.

Metal Market.

Copper.—The bankers' sale of Lake Ingot reported last week was at 14½¢. Since then offers have been made on the entire balance, and all could have been disposed of but for legal obstructions at 14½¢, or better. As it is the bankers' stock is no longer a menace, being reduced to comparatively small total by recent sales. The market is now 14⅞¢ @ 15¢, with but little supply to be had at the lower figures. Probably 1,000,000 ℔ have changed hands at 14⅝¢ @ 15¢. One lot of 200,000 ℔ went at 15¢ for prompt delivery, and 500,000 ℔ were sold at the same price for delivery September 1. There are a good many offers on Ingots and Wire Bars for forward delivery, but producers are reluctant sellers even at the enhanced price, and have refused to consider bids made for various quantities for speculative account. Casting brands, as well as Lake product, are higher and active at the advance. Bankers are said to have sold 2,000,000 ℔s. Arizona, and now hold comparatively little of that class of Copper. There have been more or less extensive sales of Ingots by other holders at within the same range of 12½¢ @ 13¢, and an offer of 12½¢ for 1,000,000 ℔s. of Baltimore was refused. It is doubtful that less than 12⅝¢ will now be accepted for any variety. Sellers' figures are limited, as a rule, at 13¢ for common casting brands, and 13½¢ for Arizona. Our private cables allude to large sales of "Syndicate" Copper in Europe, and the position of the metal seems to be very strong the world over. Some authorities predict a sharp rise within the next three months. The monthly statement of the Bureau of Statistics affords the following comparison of exports from the United States:

	In March,		9 mos. ending March 30,	
Copper Ore.	1890.	1889.	1890.	1889.
To Great Britain, tons	2,053	3,623	31,465	30,962
Other Europe	193	.....	1,841	142
Total	2,246	3,623	33,306	31,134
Ingots, Bars, &c.				
To Great Britain, lbs	7,500	459,213	7,292,299	5,065,694
Germany	.....	.....	1,063,512	696,069
France	178,179	.....	5,134,974	7,004,006
Other Europe	135,294	56,012	3,500,398	486,687
Other Countries	10,000	.....	243,551	217,230
Total	330,973	515,225	17,234,734	13,469,686

Tin.—Directly after our last report sales of Straits Tin were made at 20¼¢, in 10-ton lots, on the spot. Futures moved down correspondingly, and for a time matters looked encouraging for the "bear" interest. Statistical exhibits showed about 500 tons increase last month in the stock in London and a similar gain here, but the afloats offset this, so that the visible supply was 885 tons less on the 1st inst. than at the beginning of April. These differences, however, had little direct effect upon the local market. The chief factor has been the control of supplies by a few firms, light deliveries on May speculative contracts and limited offerings for prompt delivery. May deliveries were tendered in a few instances on the presumption that supplies would readily be obtained from the week's arrivals, but there was evidently some miscalculation on this point. In any event 20½¢ @ 20.60¢ had to be paid for the spot stock, while June delivery was bid up to 20.45¢ and July and August sold at 20.35¢. Speculative manipulation is almost the sole governing influence. Trade and consumptive demand, at any rate, is merely normal. Wednesday's prices for spot stock were about 20.55¢ @ 20.65¢ for Straits, cash, in 10-ton lots, and 20¾¢ @ 21¢ in jobbing quantities.

Lead.—Early in the week under review about 600 tons were sold at 4.07½¢ @ 4.10¢. Subsequently 100 tons were let go at 4.05¢, which, in turn, was followed by 100 tons at 4¢. The market settled at about 4.02½¢ @ 4.05¢, with speculative interest a great deal more temperate than it was a week ago, and the trade and consumptive demand moderate.

Spelter.—Fairly liberal sales of Western have been made for deliveries running about three months ahead, and the market has hardened still further. It is doubtful if 5¢ would now buy anything but remelted stock. Ordinary brands are quoted at from 5.15¢ upwards, with the usual premium for choice.

Antimony.—In this metal there is about the usual trade. Halletts is quoted at 18½¢ and Cooksons at 26¢ on the spot.

Tin Plate.—Meat canners have purchased rather more freely for future delivery, and there has been some increase in sales in other directions also, the whole making a very good business for the week. Prices have differed little from those ruling heretofore. Spot transactions have been of merely fair amount and, except for M. F. Ternes, which are scarce, values show no important variation. Stocks in England have decreased somewhat under reduced output. Prices for large lines, on the spot, are as follows: Coke Tins—Penlan grade, IC, 14 x 20, 4.32½ @ $4.35; J. B. grade, do., $4.45; Siemens Steel, $4.65; Bessemer do., $4.42½. Stamping Plates — Bessemer Steel, Coke finish, IC basis, $4.80; IX basis, $5.80; Siemens Steel, IC basis, $4.90; IX basis, $5.90. IC Charcoals—Calland grade, ½X, $5.70 @ $5.75; Melyn grade, $5.85 @ $5.87½, for each additional X add $1.50; Allaway grade, $4.95 @ $5; Grange grade, $5.10 @ $5.15, for each additional X add $1. Charcoals Ternes — Worcester, 14 x 20, $4.77½ @ $4.80; 20 x 28, $9.50; M. F., 14 x 20, $6.75; do., 20 x 28, $13.50; Dean, 14 x 20, $4.55 @ $4.60; do., 20 x 28, $9.10; D. R. D., grade 14 x 20, $4.45; do., 20 x 28, $9; Mansel, 14 x 20, $4.50; do., 20 x 28, $9.10; Alyn, 14 x 20, $4.55; do., 20 x 20, $9.10; Dyffryn, 14 x 20, $4.65; do., 20 x 28, $9.35; Wasters—S. T. P., grade 14 x 20, $4.20; do., 20 x 28, $8.65; Abercarne, grade 14 x 20, $4.20; do., 20 x 28, $8.60.

New York Metal Exchange.

The following sales are reported:

THURSDAY, May 1.

25 tons Tin, May.....20.25¢
25 tons Tin, June.....20.20¢

FRIDAY, May 2.

10 tons Tin, June..... 20.15¢
25 tons Tin, May..... 20.25¢
10 tons Tin, spot..... 20.30¢

MONDAY, May 5.

10 tons Tin, July..... 20 25¢
16 tons Lead, May..... 4.05¢

TUESDAY, May 6.

25 tons Tin, June..... 20.35¢
10 tons Tin, August..... 20.35¢

Coal Market.

There is much trumpeting in the Anthracite Coal Trade, with the object of stiffening prices, and the effort is in a measure successful. Buyers come to the seller rather than the seller to the buyer, and orders for future delivery are less frequently taken, if indeed they are entertained. It is well understood that prices can hardly be lower, while, on the other hand, a concerted advance is possible. On the 15th inst. the general subject will be considered, but it is intimated that until the enormous accumulations of Coal at central points are appreciably reduced any process of "pegging up" might not be very successful. The demand for steam and manufacturing purposes continues good in all directions, and is helped by the disposition to settle labor questions without interruption of business. The outcome of miners' troubles in Indiana and Illinois is yet uncertain. The production of anthracite coal for the week ending April 26 was 635,280 tons, compared with 629,191 tons in the corresponding week last year. The total thus far in the year is 8,540,256 tons, compared with 8,985,383 tons for the same period last year, a decrease of 445,127 tons. The Pennsylvania Railroad Company reports an increase since January 1 of 500,000 tons. Reading sent to Port Richmond during the week ending 3d inst. 23,000 tons and to Port Liberty 16,000 tons.

Bituminous coal is quiet. The Philadelphia *Ledger* is informed that all the large contracts for this season's delivery are closed, excepting the New York Central's, which calls for 350,000 tons and is the largest of all. The Beech Creek Railroad reports for the year to date an increase of 194,000 tons; the Clearfield district 184,000 tons; Huntingdon and Broad Top Railroad 172,000 tons; Chesapeake and Ohio 142,000 tons; Pocahontas 118,000 tons.

R. B. Wigton & Sons, coal shippers, have filed in the Common Pleas Court a statement in a suit brought against the Pennsylvania Railroad Company to recover damages for alleged discrimination in freight charges and for injuries done their business. They claim $107,196.22 for overcharges in freight, and $280,000 for the injury their business has suffered through discrimination.

The lease has been recorded at Wilkes-Barre by the Hallenback Coal Company to the Lehigh and Wilkes-Barre Company of 289 acres of valuable lands known as the Baltimore vein.

Imports.

Hardware, Machinery, &c.

Boker, Hermann & Co., Mdse., cs., 15.
Clark, G. A. & Bro., Mach'y, cs., 8
Degrauw, Aymar & Co., Anchors, 5
Erie Despatch Co., Mach'y, pkgs., 21
Folsom, H. & D. Arms Co., Arms, cs., 11
Hartley & Graham, Arms, cs., 17
Haast, Emil, Mach'y, cs., 2
Meacham Arms Co., Arms, cs., 20
Merchants' Despatch Co., Machine Tubs, bdls., 100; Arms, cs., 3
Pim, Forwood & Co., Mach'y, cs., 74
Schovering, Daly & Gales, Arms, cs., 21
St. Louis Dairy Co., Mach'y, cs., 1
Suzarte & Whitney, Mach'y, pgs., 85
Werlemann, H., Arms, cs., 36
Witte, John G. & Bro., Cutlery, cs., 4
Ward Jas. E. & Co., Mach'y, pcs., 6 and pgs., 77
Wyman, C. & Co., Arms, cs., 7
Wiebusch & Hilger, Arms, cs., 6
Order—Mach'y, cs., 3

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, May 7, 1890.

Pig Iron warrants have been more active, and while prices are yet irregular, the market shows better form under the influence of continued withdrawals from store and damping of furnaces, owing to comparatively high cost of production. These circumstances were the principal cause of an advance of about 1/ in prices that took place during the week. Outside speculators have been buying more extensively in a quiet way, and the belief obtains that anything below 45/ for Scotch warrants is a safe purchase. The "bear" party has not retired, but show some uneasiness and have made some attempt to cover their oversales, meanwhile manipulating to prevent any considerable advance. Scotch warrants advanced to 46/3 and Cleveland to 46/ but reacted to 45/2 and 44/6 at the close Tuesday, with Hematites at 54/6. To day there were sales at 44/6 for Scotch, 43/6 for Cleveland and 55/6 for Hematites.

The Parkside Mining Company, Cumberland, have closed their Iron Ore mines, and will remain idle until labor is cheaper.

Special brands of Tin Plate have been in good demand, and for these extra prices have been paid, but in ordinary sorts business is still moderate. The reduction in the cost of Steel Bars has helped to strengthen outside makers, who evidently have confidence in the future of the market. The new Eagle works have been registered; capital, £24,000. The new Ashburnham works, operating four mills, have started up. A works suspend operations this week.

Cessation of American buying and desire of local speculators to realize on prompts and contracts due caused a reaction in prices of Block Tin, under which there was a fall to £91.5/. Since this liquidation the market has turned for the better, closing at £92. 10/ Tuesday, with sales to-day at £92, spot, and £92. 15/, futures.

Copper has been in good demand and prices are stronger throughout. Large sales have been made of Sheets and Yellow Metal for India account. French holders have sold heavily of their stock, and a large business in furnace material has been done also. Sales recently of the latter include 1300 tons Anaconda Argentiferous, private terms; 583 tons Anaconda Matte at 9/9½; 200 tons ditto at 10/, and 212 tons ditto at 10/1½, all to arrive in Liverpool. The prospects for the future in the Copper market are considered bright. The Mason & Barry Company have declared a dividend of 3 % and carried forward £44,000.

Lower prices are again quoted for Steel Rails, Blooms, Billets, Slabs and Rods, also for Spiegeleisen and Old Iron Rails and Scrap Iron, without leading to better sales.

Cleveland Pig.—Business has continued moderate and prices show little variation. Makers quote 45/6 for No. 3 Middlesborough, f.o.b.

Scotch Pig Iron.—For makers' Iron there is yet a quiet market, and prices show but little change for the week:

No. 1 Coltness,	f.o.b.	Glasgow	67/6
No. 1 Summerlee,	"	"	66/
No. 1 Gartsherrie,	"	"	63/
No. 1 Langloan,	"	"	67/6
No. 1 Carnbroe,	"	"	47/6
No. 1 Shotts,	"	at Leith	66/
No. 1 Glengarnock,	"	Ardrossan	67/6
No. 1 Dalmellington,	"	"	57/
No. 1 Eglinton,	"	"	47/6

Steamer freights, Glasgow to New York, 2/, nominal: Liverpool to New York, 10/.

Bessemer Pig.—The demand about the same as last week and little change in makers' prices. West Coast brands, Nos. 1, 2 and 3 quoted at 60/, f.o.b. shipping port.

Spiegeleisen.—Business slow at present, and prices still in buyers' favor. English 20 % quoted at 97/6, f.o.b. shipping port.

Steel Rails.—Orders come in slowly, and the market continues weak. Heavy sections quoted at £4. 17/6, and light sections £5. 7/6 @ £6. 2/6, f.o.b. at N. W. England shipping point.

Steel Blooms.—Very little demand and prices still unsettled. We quote £4. 10/ for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—Only a moderate trade and prices again rather lower. Bessemer 2½ x 2½ inch, £4.10 /, f.o.b. at N. W. England shipping point.

Steel Slabs.—Small sales making at rather lower prices. Bessemer quoted at £4. 10/, f.o.b. at N. W. England shipping point.

Old Rails.—The demand does not improve. Sellers offer at a further decline. Tees quoted at £3, and Double Heads £3. 5/, f.o.b.

Scrap Iron.—Market very slow, and prices still unsettled. Heavy Wrought quoted £2. 15/, f.o.b.

Crop Ends.—A very quiet market, and prices weak. Bessemer quoted £2. 15/, f.o.b.

Tin Plate.—A fair business doing, and prices rather steadier. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade	15/6 @ 16/0
IC Bessemer Steel, Coke finish	13/9 @ 14/3
IC Siemens " " "	14/ @ 14/6
IC Coke, B. V. grade	13/6 @ 14/
Charcoal Terne, Dean grade	13/6 @ 13/9

Manufactured Iron.—Business in this line slow and prices are still unsettled. We quote f o.b. Liverpool:

	£	s.	d.		£	s.	d.
Staff. Marked Bars				@	9	10	0
" Common "				@	7	15	6
Staff. Bl'k Sheet, singles				@	9	10	0
Welsh Bars (f.o.b. Wales)				@	6	2	6

Tin.—The market fairly active with prices moving irregularly. Straits quoted to-day at £92, spot, and £92. 15/ for three months' futures.

Copper.—The demand continues fairly active and the market is firm. Chili Bars quoted at $49. 12/6, spot, and £50, three months' futures; Best selected, £56. 10/.

Lead.—A fair business doing and prices again higher. Quoted at £13. 2/6 for Soft Spanish.

Spelter.—The demand rather slow and the market not so firm. Quoted at £21. 5/ for Ordinary Silesian.

SOUTHERN MISCELLANY.

The machine shops of the Little Rock and Fort Smith Railroad Company, at present located at Argenta, Ark., will probably be moved to Van Buren, in the same State.

The machine shops of the Covington and Macon Railroad Company, at present located at Macon, Ga., may be transplanted in Madison, Ga., where inducements have been held out by her citizens.

A brass foundry will be established at Anniston, Ala., by Ohio parties.

The W. J. Mack Machine Shops, at St. Augustine, Fla., will add a brass and iron foundry to their plant.

The Alabama Sheet Metal Mfg. Company, with a capital stock of $5000, have been organized at Greenville, Ala., by S. J. Steiner, J. B. Hilson, Abe. Lehman, and others.

A company is in process of organization at Gadsden, Ala., which has in view the establishment of a rolling mill and stove works at that place.

Over 800 acres of valuable iron ore lands have been secured by J. H. and J. M. Lowe, near Richmond, Ga., and will be developed.

A transfer of large and important interests has recently taken place at Rome, Ga. A new syndicate have virtually bought out the Rome Land and Improvement Company. These parties, it seems, became interested in the place through Collier & Lyerly, of Chattanooga, who are now erecting a 50-ton charcoal iron furnace at Rome. It is understood that the establishment of extensive iron plants will be the outcome of this deal. Hon. Roswell P. Flower, of New York, is one of the most prominent members of the syndicate, and among the others is L. S. Colliar, president of the Rome Iron Company.

An annual meeting of the stockholders of the Woodstock Iron Company, of Anniston, Ala., is called to meet at the company's office on the 20th inst. At this meeting the stockholders will be asked to authorize the issuance and sale of first mortgage bonds for an amount sufficient to retire the floating indebtedness of the company and to provide sufficient working capital.

Valuable iron ore deposits have recently been discovered in Granville County, North Carolina.

A company is being organized at Birmingham, Ala., for the purpose of manufacturing a patent mining pump governor. L. W. Johns is at the head of the enterprise, and the invention is the property of Hugh Howard.

The Layman & Rice Railway Motor Company have been organized at Little Rock with H. D. Layman as president, L. R. Stock, vice-president, and C. T. Rice, secretary. The company will also manufacture dynamos.

The building of the American (Ga.) Iron Works, previously reported as having been commenced, will be 350 x 160 feet.

A basic steel plant and two 100-ton iron furnaces are to be built, it is stated, by the newly organized Riverton Land Company, of Riverton, Ala.

A company is being organized at Charlotte, N. C., to manufacture a patent ice-cream freezer, the invention of C. W. Wynn, of that place.

The Hagerstown Mfg., Mining and Land Company have been organized at Hagerstown, Md., and it is said to be among their intentions the building of an iron furnace, a rolling mill and iron foundry.

Twelve thousand acres of iron ore properties have been bought by capitalists near Mabel, Ga., who will open mines.

A company composed of Charles Holfinghoff, Arthur G. Moore, Thomas Clifton and others, of Cincinnati, Ohio, will erect one bar rolling mill and two sheet iron mills at Gadsden, Ala. The land company at that place offered inducements in the shape of free site and cash donation.

An English syndicate, through their representative, have purchased 4000 acres of mineral lands near Hall's Mill, Ga. A town will probably be built and a number of new industries inaugurated.

Another English syndicate, through their agent, have purchased 3300 acres of iron lands in Franklin County, Ala., for $53,400.

Still another English syndicate, under the name of the Anglo-American Association, Limited, have been formed in Tennessee at Spring City. The capital stock is $3,000,000, and 10,000 acres of land have been purchased with 50,000 acres of mineral and timber land optioned. Among the purchases is the Gillespie Iron Mine on the Tennessee river, near which point an iron furnace and rolling mill will be constructed and a new town built. Beriah Maguffin, of Lexington, Ky., is president; G. E. Mercer, of London, England, vice-president, and J. C. Neal, of Harrodsburg, Ky., secretary. The company is said to be an unusually strong one financially.

Increased activity in iron mining will be witnessed around Irondale, Ala., in the near future. The Sloss Iron and Steel Company, of Birmingham, contemplate opening new mines and make the output at least 500 tons per day. Simultaneous with this development will be the opening of mines on the 660 acres of Ried Mountain iron land, owned by a company of which Ellis Phelan is at the head.

A $15,000 machine shop is to be established at Piedmont, Ala. The company are now organizing with that object in view.

The Light Hand Fire Engine Manufacturing Company is the name of a newly incorporated company at Nashville, Tenn.

Deposits of iron ore on the Swadley Farm, near Blountville, Tenn., are to be developed.

The recently incorporated Bonanza Mining Company, of Batesville, Ark., have begun the work of developing their zinc mines.

The Anniston Machine Works, of Anniston, Ala., are reported to be contemplating the establishment of a branch plant at Johnson City, Tenn.

The machine shops of the St. Louis, Arkansas and Texas Railway Company, located at Tyler, Texas, are to be enlarged by the addition of much new machinery.

The Pioneer Steel Company are building at Bristol a steel plant. Capitalists from Pennsylvania are said to be contemplating the erection of two basic iron plants and two Bessemer iron furnaces in the same locality.

T. D. Wardlow, William Hoyt and others have formed a company and are building machine shops at Warren, Ark.

A factory for the manufacture of barbed wire is contemplated at Laredo, Texas.

Capitalists from Maine are said to be negotiating for the purchase of 164,000 acres of iron, coal and timber land in Cumberland County, Tennessee.

The contract has been let for the enlargement of the machine works, at Houston, Texas, of the J. A. Cushman Mfg. Company. Orders have also been placed for new machinery.

The Sequatchie Valley Mining and Mfg. Company have been incorporated at Chattanooga by J. W. Reardin, C. E. Lyerly, C. V. Brown, and others.

Wilt & Irwin intend opening an iron mine near Saundersville, Ga.

Contract has been let for the building, at Vicksburg, Miss., of the machine shops of the Louisville, New Orleans and Texas Railroad Company. The buildings are to cost $75,000.

The Central Mining Company, with $50,000 capital stock, have been incorporated at Cartersville, Ga., by L. S. Munford, T. W. Baxter, J. W. Akin and others, who have, in company with other parties, also organized the Central Investment Company, with a like capital stock, which has for an object the dealing in and development of mineral properties in the State of Georgia.

A number of additions in the shape of new machinery are to be made to the machine shops of G. R. Lombard & Co., at Augusta, Ga.; these are a heavy universal milling machine, a steam hammer and a radial drill press.

T. W. Robinson, manager of the Milwaukee plant of the Illinois Steel Company, reports excellent work done by No. 1 Furnace. The furnace is only 66 feet high, with 15 feet 8-inch bosh and 8-foot diameter of bell. During the week ending April 19 the furnace made 1016 tons of No. 1 Bessemer iron on a fuel consumption of 1766 pounds. The yield of the ore was 58 per cent., the limestone being 18 per cent. of the burden. The blast is heated by three Massick & Crook 18 x 60 stoves.

The Singer Sewing Machine Works, in Elizabeth, were discovered to be on fire yesterday morning in the clock tower. The main building was destroyed, and it was doubtful whether the foundry and blacksmiths' shops could be saved. The principal structure was 800 feet long on Trumbull street and 230 feet on Forst street, containing the most valuable machinery. Over 80 tons of pig iron were consumed daily, and the daily output of machines was 1500. About 2200 hands were employed. The loss will exceed $2,000,000.

The Pittsburgh committee of freight agents of the various lines entering Pittsburgh met in that city last week and made a reduction on the East-bound iron rates. The reduction averages nearly 20 per cent., and went into effect on Monday, the 5th inst. It was made because a similar reduction had been made West, and rates are always equalized in the Trunk Line and Central Traffic Association territory. The new rates from Pittsburgh to New York are now as follows: Less than car and car lots, 18 and 15 cents; Boston, 21 and 18; Philadelphia, 16 and 13; Baltimore and Washington, 15 and 12; Albany, 18 and 15; Utica, 18 and 15; Syracuse, 15 and 13; Rochester, 12 and 11; Burlington, 26½ and 23½; Portland, 24½ and 21½.

A meeting of the stockholders of the Thomas Iron Company will be held at Hokendauqua, Pa., on June 30, for the purpose of voting for or against an increase of indebtedness.

John A. Roebling's Sons Company, Trenton, N. J., are enlarging their plant by the erection of a new machine shop, 220 x 60 feet, and a building 140 x 60 feet, two stories in hight, to be known as the rope shop.

The Midland (Va.) Steel and Iron Company have been organized to manufacture Bessemer steel, with a capital stock of not less than $100,000 nor more than $5,000,000. The incorporators include Hon. John W. Daniel, John H. Inman, of New York City; M. M. Rogers, of Roanoke, and others.

The Springfield Emery Wheel Mfg. Company have removed their entire plant from Springfield, Mass., to Bridgeport, Conn., the new factories having been designed especially for their business. New machinery and the latest appliances have been added.

HARDWARE.

Condition of Trade.

Since our last review of the market there has been in this city a perceptible improvement in the volume of business, and the trade for the most part report a fairly satisfactory condition of things. Travelers are sending in many orders, which are generally well assorted with a good proportion of seasonable articles. In Builders' Hardware the demand is only fair, being interfered with to some extent by uncertainty in regard to labor. Reports from the principal trade centers indicate, with scarcely an exception, a good business and a hopeful if not confident feeling in regard to trade during the season. The review of last month's business shows that it was in most cases equal in volume to that of the same month last year, and a good many houses refer to it as slightly heavier. Prices in the market at large are steady, and during the past week there have been but few changes. Such lines as Wire, Nails and other staple goods, which lie near the raw material, have not apparently improved in price, but in such goods there has not been much further weakening. Prices of Hardware generally are well maintained. Manufacturers are for the most part fairly well supplied with orders, and while many of them are desirous of making sales, they are not at all generally offering exceptional concessions. The prosperity of the country at large is to be noted as assuring the absorption of a large amount of goods and promising a volume of business which will be, without much doubt, fully equal to that of last year. Increasing attention is being given by manufacturers to export business and an increasing line of goods is constantly being sent abroad.

Speculative Orders.

In our last issue we referred to the mischievous practice which prevails to a large extent among Hardware manufacturers of soliciting and accepting orders for future delivery with the more or less definite understanding that the order may be annulled at the option of the purchaser, and we pointed out that such a custom is obviously disadvantageous to the manufacturer as all the options are at the purchaser's end. The manufacturer is thus in a state of uncertainty in regard to whether or not the goods will be taken, while as such contracts are often vague and unspecified he is unable to know at what time his customer will demand the goods, his only assurance being that in case the market advances materially beyond the price at which the goods are sold he will be held strictly to the filling of the order. It is also not improbable that the purchaser will endeavor to have the quantity increased at the old price.

While this practice is injurious to the interest of the manufacturer, it should be borne in mind that it is also detrimental to the interests of the trade at large. Those who are familiar with the course of prices are aware that very much irregularity is induced by the fact that leading houses have placed their orders prior to almost every important advance, so that they are thus in a position to undersell the manufacturer and their own less fortunate competitors. On account of such orders the business of one or two seasons is often required to exhaust the supply of leading goods on which advances have taken place, and during this time manufacturers are competing with their own goods and the trade at large are regretting the prevalence of cutting prices and their injurious effect upon business.

The influence of this practice in introducing a speculative element into business is also to be regretted, as it affords opportunities to buyers to place orders for goods on which by their early rise they may make a handsome profit, with the assurance that if the anticipated advance does not take place they can avoid loss by countermanding the order. They are thus permitted to speculate without the risk which in a normal condition of trade attends speculation. The effect of this upon the buyer and the trade is not healthful.

This practice will naturally be defended by some Hardware merchants as a desirable one for them, as it gives opportunity for a profit which in these days of close competition is not easy to secure. There is obviously some force in this consideration, but even those who advance it are ready to concede that the practice in question is unbusinesslike and unreasonable. In fact, surprise is often expressed even by merchants who avail themselves of the advantages of the practice that manufacturers are so short-sighted or weak-kneed as to permit it. It is, however, probable that the shrewdest and ablest buyers would be glad to see the practice discontinued, inasmuch as in that case the very highest business ability would be required in purchasing goods. It is a comparatively simple thing to purchase safely if orders may be placed for execution at such times and in such quantities as the buyer may determine, or may be cancelled at his option. It is obvious that there is no risk nor need of any great ability in such purchasing. If, on the other hand, the buyer is required to place specified orders and accept the goods as specified, without the privilege of cancelling the order, it is only those whose forecast of the market is correct who will be able to purchase to advantage. In that case those who are shrewd and far-sighted will be able to reap the benefit of their sagacity, instead of standing, as they now do, practically on the same level with their less able and experienced competitors.

The recent falling away in the prices of certain staple goods, among which Wire has a prominent place, has had the effect of bringing to light many instances in which purchasers desired to have their contracts annulled, and many of the manufacturers are considering the question as to whether or not this privilege will be granted. There is an increasing disposition on their part to hold buyers to the execution of their orders, and in this it will generally be conceded that they are in the right, unless there was some understanding, expressed or implied, that the purchasers should be given the privilege of countermanding them. Whatever the hardship there may be in individual cases, it will be a great gain if the vicious practice under review can be done away with. The remedy is evidently with the manufacturers. The only question is whether they have the requisite independence and resolution.

The article in our last issue has called out a number of responses from prominent manufacturers who express themselves as endorsing the position taken, and referring to the practice as a most pernicious one, demoralizing alike to buyer and seller. Referring at some length to the question, we have the following from a prominent New England house, in which the injurious effect of the practice and its unreasonableness are forcibly pointed out:

We notice your remarks in your issue of May 1 on subject of countermanding orders. We have long known that much injustice is submitted to by the manufacturers from this pernicious practice. We regret to say that there are houses in this country who think no more of countermanding an order than they would of any of the other petty tricks known in the trade. At every show of an advance they are ready to place speculative orders. If the advance has already taken place, and the manufacturer protests against booking the order, they promptly set up the old song about "taking care of them," &c. Now if the advance should fail to take place, or if prices should begin to recede, it is no uncommon thing for certain houses to repudiate the order several months after it was given. The customer is rarely held to his agreement by legal process because the manufacturer hesitates to go to that extent. But it is manifestly a great hardship to the manufacturer who has made his plans, based upon the orders in hand, and who has contracted for his pig iron, his copper, &c., and would be drummed out of the trade if he offered to repudiate his contracts for metals or supplies. The burden always falls upon the manufacturer, and until such a time as merchants of repute will keep their contracts with manufacturers with as much integrity and commercial honor as would be required in dealing in metal, this habit of countermanding orders will be a great evil.

The merchant who gives an order for future delivery does it on his own judgment, and when he finds he has made a mistake he should stand by his own act and not seek to throw it on to the manufacturer. The manufacturer has no better judgment of the future than the merchant, and he governs his conduct by the contracts which the merchant is willing to place with him. If after the manufacturer has made all his preparation to deliver the goods at the time specified the merchant can cancel his order and leave the manufacturer in the lurch, there is manifestly something wrong in our system of doing business. We are glad to see you discuss this subject, and we hope that its ventilation may lead to much needed reform in certain quarters which many manufacturers could point out if they would.

In the following letter a prominent chain manufacturer thus alludes to the

subject and touches also upon the related practice of guaranteeing prices:

We have read your article under the head of "Countermanding Orders," and quite agree with you in all you have said. It is a most pernicious habit that the trade generally have fallen into and often causes the manufacturer serious loss. For instance, they will order a cartload of goods at a price, the manufacturer will buy his raw material in order to make up these goods, and when the time comes to receive specifications the customer will fail to send them, and upon closer inquiry the manufacturer will find that the purchaser has bought at a less price elsewhere, and he is left with his high price material on his hands and the loss of the sale. You will, therefore, see that closely allied to the countermanding of orders is the still more injurious habit of manufacturers guaranteeing prices, as the purchaser seems to think that he is not in honor bound to the manufacturer in any way whatsoever. He simply places an order for future delivery, and if the market has declined at the date of delivery he will buy elsewhere, or demand from the manufacturer that his order be filled at the then lower price. We heartily endorse all that you have said, and hope that you will be successful in breaking up this practice.

In the letter printed below our correspondents illustrate the mischievous effect of this practice by referring to the Nail market, but it would appear that it is the opinion of the writers that, owing to the present position occupied by the merchant in relation to the manufacturer, there is comparatively little prospect of a correction of the abuse:

It is needless to say that the abominable practice which characterizes merchants of this country for their ability of reckless buying and ready countermanding of Nails bought is one of the greatest drawbacks in this industry. It is, however, closely connected with the historical position the merchant has over the manufacturer. He has occupied the field first, and has up to this date maintained paramount position, to whom manufacturers are always ready to make concessions. We do not think that lately one contract has been canceled which was worded in such a way that the buyer could be legally forced to take the goods. A contract for 10,000 to 20,000 kegs of Nails, to be taken as required, and specifications to begin at once, is a beautifully optional contract for the buyer, and it is ended as soon as the buyer sees fit to end it, and this is the form of almost every contract in the Nail business. It is different with contracts for raw material. Raw material is bought at a specified price and a specified delivery per month, and a great part is bought with bankers' credit, and no sooner are the goods on the car than the banker will hand the money over to the shipper against the bill of lading. Such goods go to certain points, where they are transformed into finished product, but it is impossible to ship to a large syndicate buyer a monthly amount of Nails on contract if he does not have specifications on hand. If, however, the buyer was forced by the terms of his contract to take the goods or pay damages such large contracts would not be made, and the manufacturer would have a chance to avail himself promptly of any rise in the market. So long, however, as the number of manufacturers is large as compared with the number of buyers any suggestion in this direction will be of no avail. The same anxiety that drives the Nail manufacturers into doing foolish things will continue hereafter on account of their position.

In connection with this matter it is of interest to note that a meeting is being held this week in Pittsburgh by the manufacturers of Barbed and Plain Wire, and Cut and Wire Nails. Their object is to take, if the way be clear, concerted action to do away with the practice of taking orders for future delivery at a stipulated price, and then allowing buyers to cancel the same if the seller does not meet some lower price which has been offered. The results of their conference will be awaited with much interest, as, if they succeed in checking the practice in these important lines, where its evils have been perhaps as marked as in any others, it will have an excellent effect upon all branches of the trade.

Chicago Hardware Market.

(*By Telegraph.*)

The general hardware trade has latterly been very active. Shelf Hardware jobbers report all kinds of goods moving quite freely. Seasonable goods are of course in the lead, but the demand for staple Hardware is strong. Now that April has passed, and the business of the month is recorded in black and white, the leading houses have noted a very large increase over the same month of last year.

No changes of moment have occurred in shelf Hardware prices. Bolts and Nuts, and similar goods, are inclined to weakness, but there is a sharp and well sustained demand for them which supports prices very satisfactorily; their judgment would lead buyers to wait, but their necessities compel them to buy.

Heavy Hardware jobbers make equally encouraging reports. Their trade is excellent and promises to continue so.

Cut Steel Nails went off a few points more during the week, and sales were made at $1.75 at factory, but the old practice of making concessions for high averages has again been put in force, and the net price is consequently very low to those able to make up good specifications. Mill agents report numerous sales, but many dealers are even now afraid to buy lest prices may go still lower.

Wire Nails are firmer, the manufacturers now being well supplied with orders. Much interest is felt in the result of the meeting at Pittsburgh, Tuesday, which was expected to take important action with reference to prices and a form of order blanks. Late sales were made at $2.30 @ $2.35 Chicago, but new price is expected to be $2.40. Small lots of Steel Nails sell at $2 @ $2.15 from store, and Wire Nails, $2.45 @ $2.50. Wire Nails are shaded when necessary.

Some Barb Wire manufacturers are still experiencing a light trade, but others, and the jobbers particularly, are selling very freely and moving large quantities of fencing. The improvement in trade does not help the price. Painted is worth from 2.9¢ @ 3¢, andGalvanized 3.50¢ @ 3.60¢.

Heavy Hardware Jobbers' National Union.

The meeting to which we referred in our last issue was held last Friday and Saturday at Cleveland. The members attended in large numbers and received a very cordial reception from Cleveland jobbers and manufacturers, who seemed gratified to have an opportunity to show hospitality and discuss matters of mutual interest. A number of important questions received careful attention, but a full report of the action taken is deferred until some matters now under consideration are arranged.

Cut Nails.

The New York market continues moderately active. The fact that buyers are generally very urgent for quick delivery indicates how low the stocks in their hands generally must be. We continue to quote $1.80 @ $1.90 for Iron Nails in carload lots on dock.

A meeting of the Western Cut Nail Manufacturers' Association was held in Wheeling, W. Va., on Thursday, the 1st inst. The present card of $1.90 in carload lots was reaffirmed. No other action was taken.

Barb Wire.

Western Barb Wire is offered in this city in large lots at mill on a basis of 3.15 @ 3.20 cents for Galvanized Four Point, and it can be bought in New York at 3.45 @ 3.50 cents, at dock, in round lots. In this market the usual advances are made on small lots.

Wire Nails.

The market in these goods is practically unchanged, quotations being on the basis of $2.40 to $2.50 in carload lots at factory. Most of the manufacturers have a good supply of orders, and some of them refuse to meet the extreme quotations made by others.

Miscellaneous Prices.

The Shot market remains as at our last report. It is characterized by a decidedly firm tone and the trade are in expectation of an advance. This has not, however, up to the hour of our report occurred. Negotiations between the Eastern and Western manufacturers are continued and it is thought that some understanding will be reached. There have, however, been some obstacles which have prevented an earlier concert of action.

At a meeting last week of the Eastern manufacturers of Loaded Shells a reduction was made in price. By the action taken the general discount was put at 40 and 10 and 10 and 5 per cent., quantity discounts on considerable lots being also determined upon.

There is also some irregularity in the Fuse market and discounts from the list are more freely given than heretofore.

The situation in Powder remains unaltered. The competition between the manufacturers is decidedly animated and prices are referred to as low and irregular.

A meeting of the manufacturers of Wrought Iron Pipe was held in this city last week and existing prices were confirmed. The manufacturers report a very satisfactory demand and a firm tone in this line.

A meeting of the manufacturers of Cast Butts was held in this city April 30. No change was made in quotations and former prices were confirmed.

There is no important change to note in the market for Augers and Bits. It is re-

ported that there are still some efforts being made to form a combination on these goods, but there is no immediate prospect that all the manufacturers can be interested in the scheme. It is recognized that prices for this line of goods are unprofitably low. At the same time there is a wide diversity in the quotations that are made, some of the manufacturers selling at exceptionally low figures and others holding their goods materially higher. There is but little doubt that the animated competition which has existed for so long a time, and the disposition on the part of some makers to offer the goods at unprofitable prices has resulted in reducing the quality of some of the Augers and Bits, and it will doubtless be to the interest of the trade to regard the quality of the goods they purchase and not permit the matter of price to be the ruling consideration As touching upon this point we have received the following communication from a well-known manufacturer. The points to which he calls attention are deserving of careful consideration :

The Auger and Bit Makers have competed against each other, and in order to keep their trade have quoted prices so low that to make ends meet they are obliged to use the cheapest stock, and put no more labor on them than will make them look like an Auger or Bit. This must in time tell on the trade of both the maker and seller of such goods. It is true that the manufacturer who uses crucible Cast Steel and spends labor enough to make good tools cannot sell at the prices quoted by those who make and sell what they call Bits and Augers. We have been working up the export trade. Such trade should see that none but the best goods are exported. America in the past has been able to beat the world in making Augers and Bits, both in price and quality, especially the latter. If the quality is poor it will not matter long what the price is. There are some manufacturers who make a first-class tool, but they are not the ones who are selling at the very low prices ; neither can they without pecuniary loss.

The following are the prices of the Tiffin Union Churns, manufactured by the Tiffin Union Churn Company, Tiffin, Ohio:

	Each.
No. 1, 5-gallon	$3.25
No. 2, 7 "	3.75
No. 3, 10 "	4.25

D. Picking & Co., Bucyrus, Ohio, manufacturers of Machine Wired Hand Hammered Copper Kettles, issue an illustrated circular descriptive of their goods. They also make Switzer Cheese Kettles and Candy Pans They print a new list on small Copper Kettles for fruit canning and general stove use, as follows. It is subject to a discount of 10 per cent.:

	Each.
3 gallons	$1.80
4 gallons	2.00
5 gallons	2.20
6 gallons	2.40

L. S. Starrett, Athol, Mass., manufacturer of fine Mechanical Tools, announces that from May 1, 1890, until further notice the discount on his goods to all the Hardware trade, without exception, will be 2 and 10 per cent. off list prices on all Tools illustrated in his catalogue, except the following:

On all styles of Spring Bowed Calipers and Dividers, and also Surface Gauges, 40 per cent.

On No. 20 Squares, No. 28 Caliper Square, No. 3 Micrometers and No. 103 Hack Saws, 25 per cent.

TERMS: Net cash in 30 days, or 2 per cent. discount for cash in ten days.

All persons buying $250 worth, net, of his goods in the six months preceding July 1 and January 1 will be entitled to a rebate of 5 per cent. at each of those dates on the whole amount of purchases made during the previous six months. The first rebate will be credited January 1, 1891, to all buying $350 worth, net, from this date until that time.

Copper Tea Kettles, &c.

Johnson Mfg. Company., Collins, N. Y., in their catalogue devoted to Menaar patent Tea Kettles, Wash Boilers, Urns, &c., to which we have already referred, illustrate the varied line which they are putting on the market. They also give list prices and descriptive matter. The following goods, which are represented on pages 2 to 9 inclusive, are subject to a discount of from 60 to 60 and 10 per cent.:

All Copper Tea Kettles.—Made in Two Pieces.

Pit bottoms.

No. 9, for 6 inch, per dozen	$24.00
No. 11, " 7 " "	27.00
No. 12, " 8 " "	30.00
No. 13, " 9 " "	33.00

Flat Bottoms.

No. 110, for 6 inch, per dozen	$24.00
No. 111, " 7 " "	27.00
No. 112, " 8 " "	30.00
No. 113, " 9 " "	33.00

Nickel-Plated on Copper.

Pit Bottoms.

No. 16, for 6 inch, per dozen	$33.00
No. 17, " 7 " "	36.00
No. 18, " 8 " "	39.00
No. 19, " 9 " "	42.00

Flat Bottoms.

No. 116, for 6 inch, per dozen	$33.00
No. 117, " 7 " "	36.00
No. 118, " 8 " "	39.00
No. 119, " 9 " "	42.00

For brazed spouts add $2.50 per dozen to above list.

All Copper Tea Kettles—Made in Three Pieces.

Pit Bottoms.

No. 4, for 6 inch, per dozen	$24.00
No. 5, " 7 " "	27.00
No. 6, " 8 " "	30.00
No. 7, " 9 " "	33.00

Flat Bottoms.

No. 40, for 6 inch, per dozen	$24.00
No. 50, " 7 " "	27.00
No. 60, " 8 " "	30.00
No. 70, " 9 " "	33.00

Nickel-Plated on Copper.

Pit Bottoms.

No. 26, for 6 inch, per dozen	$33.00
No. 31, " 7 " "	36.00
No. 32, " 8 " "	39.00
No. 33, " 9 " "	42.00

Flat Bottoms.

No. 300, for 6 inch, per dozen	$33.00
No. 310, " 7 " "	36.00
No. 320, " 8 " "	39.00
No. 330, " 9 " "	42.00

For brazed spouts add $2.50 per dozen to above list.

Copper and Tin Tea Kettles—Tin Spout. No. 1.

Pit Bottoms.

No. 21, for 7 inch, per dozen	$16.00
No. 22, " 8 " "	17.00
No. 23, " 9 " "	18.00

Flat Bottoms.

No. 210, for 7 inch, per dozen	$16.00
No. 220, " 8 " "	17.00
No. 230, " 9 " "	18.00

For copper spouts add $2 per dozen to above list.

Copper and Tin Tea-Kettles—Tin Spout.

Pit Bottoms.

No. 27, for 7 inch, per dozen	$15.00
No. 28, " 8 " "	16.00
No. 29, " 9 " "	17.00

Flat Bottoms.

No. 270, for 7 inch, per dozen	$15.00
No. 280, " 8 " "	16.00
No. 290, " 9 " "	17.00

Copper Range or Parlor Kettles—With Brass Wire Handle.

All Copper.

No 36, for 6 inch, per dozen	$15.00
No. 37, " 7 " "	16.50
No. 38, " 8 " "	20.00
No. 39, " 9 " "	33.00

Nickel Plated.

No. 360, for 6 inch, per dozen	$22.50
No. 370, " 7 " "	24.00
No. 380, " 8 " "	27.00
No. 390, " 9 " "	30.00

For Brazed Spouts add $2 per dozen to above list.

Copper Range Kettles—"Tom Thumb." With Brass Wire Handles, Brazed Spout.

Copper.

No. 1, for 4 inch, per dozen	$13.50
No. 2, " 5 " "	15.00
No. 3, " 6 " "	16.50

Nickel Plated.

No. 10, for 4 inch, per dozen	$21.00
No. 20, " 5 " "	22.00
No. 30, " 6 " "	24.00

English Toddy Kettles.

No. 100, Copper, per dozen	$24.00
No. 101, Nickel-plated, per dozen	33.00

Copper Boilers—With Spun Copper Bottoms.

Pit Bottom.

No. 82, 4 quarts, 7 inch, per dozen	$14.00
No. 83, 6 " 8 " "	15.00
No. 84, 8 " 9 " "	16.00

Flat Bottom.

No. 85, 4 quarts, 7 inch, per dozen	$14.00
No. 86, 6 " 8 " "	15.00
No. 87, 8 " 9 " "	16.00

The following goods, which occupy pages 10 to 15, inclusive, are subject to a discount of 50 per cent.

All Copper Urns.

Pit Bottoms.

No. 41, for 7 inch, 2 gallons, each	$3.50
No. 42, " 8 " 3 " "	4.00
No. 43, " 9 " 4 " "	4.50

Flat Bottoms.

No. 44, for 7 inch, 2 gallons, each	$3.50
No. 45, " 8 " 3 " "	4.00
No. 46, " 9 " 4 " "	4.50

Nickel-Plated, on Copper.

Pit Bottoms.

No. 47, for 7 inch, 2 gallons, each	$4.00
No. 48, " 8 " 3 " "	4.50
No. 49, " 9 " 4 " "	5.00

Flat Bottoms.

No. 94, for 7 inch, 2 gallons, each	$4.00
No. 95, " 8 " 3 " "	4.50
No. 96, " 9 " 4 " "	5.00

All Copper Wash Basins.

No. 53, 10½ inch, per dozen	$8.00

Nickel-Plated.

No. 54, 10½ inch, per dozen	$12.00

All Copper Dippers.

No. 55, for 1 quart, per dozen	$7.50
No. 56, for 2 " "	10.50

Nickel-Plated.

No. 57, for 1 quart, per dozen	$12.50
No. 58, for 2 " "	15.50

All Copper Funnels.

No. 00, ½ pint, per dozen	$3.50
No. 01, 1 " "	4.00
No. 02, 1 quart, "	5.00
No. 03, 2 quarts, "	6.00

All Copper Measures.

No. 05, ½ pint, per dozen	$4.50
No. 06, 1 " "	6.50
No. 07, 1 quart, "	9.00
No. 08, 2 quarts, "	11.00
No. 09, 4 " "	14.00

All Copper Measures.

No. 402, 2 gallon, each	$4.50
No. 403, 3 " "	5.00
No. 404, 4 " "	5.50
No. 405, 5 " "	6.50

All Copper Valve Funnel—Combined Measure and Funnel.

No 406, per dozen	$18.00

Nickel Plated.

No. 407, per dozen	$24.00

Lemonade Shakers.

All Copper.

No. 88, ½ pint, per dozen	$3.60
No. 89, 1 " "	4.32
No. 90, 1½ " "	4.80

Nickel Plated on Copper.

No. 91, ½ pint, per dozen	$4.32
No. 92, 1 " "	5.28
No. 93, 1½ " "	6.00

All Copper Wash Boilers—14-Ounce Polished Copper.

Oval—Pit Bottoms.

No. 61, for 7 inch, per dozen	$58.00
No. 62, " 8 " "	63.00
No. 63, " 9 " "	67.00

Oval—Flat Bottoms.

No. 64, for 7 inch, per dozen	$58.00
No. 65, " 8 " "	63.00
No. 66, " 9 " "	67.00

Oblong—Flat Bottoms.

No. 67, for 7 inch, per dozen	$65.00
No. 68, " 8 " "	70.00
No. 69, " 9 " "	75.00

Items.

S. A. Haines, of the S. A. Haines Company, 90 Chambers street, New York, has started on a Western trip, during which he will visit of most of the large trade. During his absence the office will be under the efficient management of Charles F. Fernald, who is widely known to the trade.

The Black Hardware Company, Detroit, Mich., have decided to consolidate their Detroit interests with the business they have started in Seattle, Wash. Their Detroit business will be closed prior to July 1. At Seattle it is their intention to carry all kinds of Hardware, Heavy and Shelf Goods, Tinners' Stock, Ship Chandlery Goods, Plumbers' Supplies, &c. They are occupying six stores at Seattle, and report the volume of business very flattering. They will have the best wishes of the trade in their new enterprise.

The Prentiss Vise Company have removed to 44 Barclay street, where they are pleasantly located, and have the requisite accommodations for their business.

C. E. Jennings & Co., 79 Reade street, N. Y., are agents for the Centennial Door Bell. In a circular relating to this article they refer to it as producing the same results as an electric bell without electricity, requiring no winding up, and state that ½-inch pull on lever will give 50 distinct taps on the gong. It can be easily put in position, either on the door or at a distance from it.

H. R. Hamilton, of the firm of Dennison & Hamilton, which was recently dissolved, is now conducting a commission business in Hardware and Tinware specialties at the same location, 67 and 69 Lake street, Chicago. He has secured some choice agencies and is negotiating for others.

The Victor Mfg. Company, Newburyport, Mass., whose Moody Steel Anti-Friction Door Hanger, in the form in which they are now making it, is described on page 794, advise us that a full line of their Hangers is carried by Cutler, Woodrough & Co., Chicago, Ill., and Hoen & Von Kapff, Baltimore, Md.

The old established Hardware house of Goodnow & Wightman, Boston, Mass., has been removed from 176 Washington to 63 Sudbury street. The firm began business in 1867 and were located on Cornhill for ten years, when they moved to the Washington street store just vacated. Their new quarters afford double the room formerly occupied, and will enable them to carry a larger stock of General Hardware and accommodate increasing business in Machinists' Supplies, which is their specialty.

S. A. Haines Co., 90 Chambers street, New York, have been appointed agents for the sale of Scranton's Improved Nail Puller, manufactured by the Belden Machine Company, New Haven, Conn., a description of this article was, it will be remembered, given in our last issue.

We are advised that the business of John G. Witte & Brother, importers of Hardware, Cutlery, Guns, Needles, &c., 75 Chambers street, New York, will be carried on without interruption under the old name by William Witte, the surviving partner.

In a recent issue the *News*, Frederick, Md., has a picture of John E. Price, and refers to him in a biographical sketch as one of the foremost of the representative business men of Frederick. Mr. Price is of German ancestry, and was born in Franklin County, Pa., July 28, 1840. Early in December, 1868, Mr. Price removed to Frederick, and in company with B. F. Stewart opened an Agricultural store on January 1, 1869. They were the pioneers of their business in Frederick, and their venture proving successful they soon arranged for more commodious quarters. In the fall of 1871, upon moving in the building which had been erected for their use, they added Hardware to their Agricultural business, and soon became recognized by the public as one of the leading commercial houses of Frederick In the fall of 1875 they purchased a fine business property, of which they took possession in January, 1876. In January, 1882, the firm was succeeded by J. E. Price and D. T. Ordeman, under the name and style of J. E. Price & Co. Under this management the business has steadily grown until it has attained to present dimensions.

William T. Barbee, manufacturer of Wire Goods, Wrought Iron Fences, &c., has removed from 100 Lake street to 44 and 46 Dearborn street, Chicago. Increasing business made it necessary for him to secure more room, and the new premises furnish very commodious quarters.

The trade will observe the advertisement on page 55, in which W. A. Comstock & Co., 94 Wabash avenue, Chicago, illustrate their Hill Pattern Triangular Hog Ring. Their Hog Ringer is also represented.

The trade will be interested in the advertisement on page 62, in which Carter & Co., Scranton, Pa., manufacturers of Axes, Scythes, Edge Tools, Railroad and Mining Tools and Hand Agricultural Implements, illustrate their line of Axes, to which they are calling special attention at this time.

Price-Lists, Circulars, &c.

Wire Goods Company, Worcester, Mass., have purchased the stock and plant of F O. North & Co., Boston, Mass., and have added their line of Automatic Blind Fixtures to their regular list of manufactures. They issue a circular describing these well known goods, with illustrations and list prices. They also send out for insertion in their catalogue new pages illustrating the Umpire Mop Head and the Czar All-Steel Coat and Hat Hooks and the King Two-Ring Pot Chain.

The Gilbert and Bennett Mfg. Company, of New York and Chicago, have issued their annual spring catalogue of Wire Goods, Netting and Fencing. This publication comprises 82 pages, covering an immense variety of goods for farm and garden purposes, house furnishing, mechanics' tools, &c. A revised price-list, supplanting all previous lists, forms part of the work. In a note to the trade the company state that they have increased the facilities at their Connecticut works for manufacturing Wire, Wire Cloth, Netting and Fencing. They have their own machine shops for constructing all the necessary machinery. Their branch factory in Chicago now occupies the entire building at the corner of Austin avenue and North Jefferson street, and is well equipped to make a large line of goods.

Dame, Stoddard & Kendall, 374 Washington street, Boston, Mass., importers, manufacturers and wholesale dealers in Fishing Tackle, Cutlery, Skates, Base Ball, Tennis, Athletic and like goods, issue a 68-page illustrated catalogue of fine Fishing Tackle. They carry a large and complete line of Plain and Snelled Hooks, Trolling Spoons and Minnow Baits, Flies, Lines of all kinds, Reels, Rods and Rod Fixtures, Minnow Buckets, Fishing Tackle Cases and all of the many goods that help to make the annual outing so pleasant. Their catalogue is attractive in appearance and shows much care in its make-up. It is sure to be appreciated and kept as a book of reference.

The Lunkenheimer Brass Mfg. Company, Cincinnati, Ohio, send their monthly advertising catalogue. This is printed in copying ink, the pages perforated so as to tear out any page. At the bottom of each page is a space left for address. They say on front cover: "If you desire discount on any article found upon these pages, tear out that page and return with your name and address inserted, and we will send it back with discount." Their product consists of Valves of various kinds, Automatic Cylinder Cocks, Glass Body Oil Pumps, Oil Cups, &c.

The Bed Rock Emery Wheel Works, 236 Chestnut street, Philadelphia, Pa., issue a folder descriptive of their goods. They refer to the five distinct and separate stones which they offer and the claims made in regard to them. They are prepared to furnish Emery Wheels, Corundum Wheels, Emery Machinery, &c.

The Toledo Block Works, Toledo, Ohio, issue an illustrated price list of Harcourt's Patent Inside Iron Strapped Blocks, of which they are manufacturers. They also allude to the fact that, in addition to the articles herein listed, they manufacture all kinds of Ironwork for buildings, Cresting, Jail Work, &c.

The Kinsley Iron and Machine Company, Canton, Mass., are sending out an illustrated price-list of their productions. They manufacture Bar Iron, Crow Bars, Axles, Tuyere Irons, Tire Benders, &c. They also inclose separate sheets showing their Bullion Ladles, the Boss Jack Screw and Kinsley Calking Vise. These goods are referred to as being of superior quality. The Bullion Ladles, of which they carry a stock, are made of hammered Norway Iron.

The Nubian Iron Enamel Company, Chicago, Ill., send a card calendar for May, with a convenient ribbon to hang it by; also a small book of testimonials entitled "A Word to the Wise." Their Enamels for various purposes call forth recommendations from those who have used them.

The Lee-Clarke-Andreesen Hardware Company, Omaha, Neb., send out their illustrated circular, covering the usual line of summer goods, for 1890. This is complete in all the departments, and will undoubtedly be appreciated by the trade in general. A unique design on the front cover represents their orders being drawn through a huge faucet from a globe in the form of water, the waves made by the continuous stream being labeled Refrigerators, Ice Cream Freezers, Water Coolers, Lawn Mowers, Wire Cloth, Screen Doors, Fruit Cans, &c.

The Penn Lock Works, 146 North Fourth street, Philadelphia, Pa., issue a large illustrated catalogue and price list of Locks, Latches, Keys, &c. They also manufacture Locksmiths' and Bell Hangers' Supplies and Electrical Goods. They call especial attention to their Nickel Plated Steel Key Blanks, which are made of Cast Steel and to suit all Locks now in the market. They furnish Key Blanks to correspond with any Key made by having the number and name of the maker.

The Keystone Lock Works, E. T. Fraim, Lancaster, Pa., have purchased the patent of the Allendale Lock Company's Brass Padlocks, and have improved them by the addition of some patents, having the exclusive right to manufacture them. They refer to the Locks as being constructed on an entirely new principle, and make the point that they cannot get out of repair nor be picked. They are made of solid Real Bronze Metal, and

their beauty of finish, design and general appearance are referred to.

The Maine Mfg. Company, Fairfield, Maine, issue a 15-page illustrated catalogue of their Refrigerators, Window Screen and Door Screen Frames, and "The Red Settee," the latter being for lawn and piazza use. Referring to "cold facts" about the Maine Refrigerators, they give a detailed description of the material used and their construction.

Walbridge & Co., Buffalo, N. Y., send out their illustrated circular of summer goods under date of May 5. They include under this head Steel Goods, Garden and Floral Tools, Lawn Mowers, Screen Wire, Screen Door Trimmings, Tricycles, &c. The circular contains 44 pages, and will be valuable for reference.

The Lufkin Rule Company, Cleveland, Ohio, print a 20-page circular devoted to Board and Log Rules, &c. This is designated as "Pamphlet A," and embraces a very complete line of specialties for the lumber trade. They call attention to their Steel Tapes and Steel Rules, also to the Perfection Glass Board, all of which they manufacture.

The Trenton Indicator Bolt and Lock Company, Trenton, N. J., whose Indicator Lock and Bolt is illustrated on page 55, issue an attractive catalogue elegantly printed in which their Indicator Bolts are described. They also issue separate circulars describing their goods and calling attention to their construction and advantages.

Merchant & Co., 517 Arch street, Philadelphia, Pa., issue a convenient illustrated price-list of their Brass and Copper specialties. Over 20 illustrations of Ornamented Sheet Metal are given, showing a large variety of designs. They also show more than 30 patterns of Ornamented Rods, in rounds, hexagons and squares. A large number of Brass Moldings, Solid-Drawn Rods, Channel and Flat Drawn Shapes are given. Many varieties of Brazed Tubing, both plain and ornamented, complete the illustrations. The rules to be observed in ordering, which are given, together with various tables of weights and measures, and blank pages left for memorandums, make it a very convenient and desirable handbook.

Milton Mfg. Company, Milton, Pa., issue a price-list of Wrought Iron Plate Washers which they are manufacturing. It is mentioned that they operate their own rolling mills and cut these Washers from plates rolled expressly for the purpose and true to gauge. They have special machinery designed and patented by S. J. Shimer & Sons, with automatic feed cutting from four to six Washers at every stroke. They emphasize the point that their Washer is perfectly flat, with the hole in true center.

Matthai, Ingram & Co., Baltimore, Md., issue a 38-page summer-goods annual. In it they describe Water Coolers, Refrigerators, Freezers, Vapor, Gas and Oil Stoves, seasonable Tinware, Fly Traps and the Keyless Improved Fly Fan. They also direct attention to their Stamped, Pierced and Japanned Ware, Universal Cash Registers, &c.

Butts & Ordway, Boston, Mass., have issued their price-list No. 2. It is an elegant printed pamphlet of more than 100 pages. In it they illustrate an interesting line of goods in the way of Heavy Hardware, Wheels, Wheel Stock, Contractors' Supplies, &c. It thus relates to Nuts, Washers, Bolts, Screws, Files, Stocks and Dies, Screw Plates, Forges, Drilling Machines, Drills and Vises, Tire Benders, Machinists' and other Hammers, a line of Wagon Hardware, &c. It is gratifying to observe the care with which this catalogue has been compiled and the excellent taste which has directed its arrangement. The increased size and compass of the book are also to be noticed, as indicating the enterprise and progress of the house.

Moline Pump Company, Moline, Ill., issue a catalogue and price-list in which 100 pages are devoted to the illustration of ther extensive line of Pumps. The catalogue is well printed and conveniently arranged, and the moderate size of the cuts permits the presentation in compact form of satisfactory descriptions of a large variety of goods.

Worcester Machine Screw Company, Worcester, Mass., have issued a new edition of their catalogue which contains the standard list of Machine Screws and related goods. Illustrations are given of the different articles, with conveniently arranged list prices. An explanation is also given of the two forms of screw threads in general use and also other matter of interest.

Merriam Mfg. Company, Durham, Conn., issue a circular in regard to their Cash Boxes, which have recently been put on the market. These Boxes, which are referred to in their advertisement on page 58, are described as made of extra heavy tin with solid corner-guards, and it is claimed that the Box is as strong as can be made out of tin, and that they are adapted for use by conductors or for bank use. These Boxes are made with three grades of locks, "M" Four-Tumbler Lock, with two flat keys, Genuine Yale Corrugated Key Lock and Yale Dial Combination Lock, and are finished in rich maroon enamel, the corner guards being in gold bronze. A circular is also issued referring to their Mail Box, fitted with a secure tumbler lock with 20 changes, the security of which is specially pointed out.

The Janesville Hay Tool Company, of Janesville, Wis., have issued a neat catalogue of the specialties which they manufacture. They have built up a large trade in Hay Carriers for the use of farmers in handling hay and grain. Strickler's Reversible Hay Carrier is described in this catalogue as the strongest carrier made. The Boss is also a reversible carrier. The Rod and Cable Carrier is made with grooved wheels, to run on a ¾-inch rod or cable. Strickler's Dead Lock Swivel Carrier is a combination carrier which will work in any direction desired. The Daisy is a self-reversing swivel carrier. The new steel track carrier has a track made of steel angles supported by hangers, while the wheels of the carrier are flanged to keep them in place. It is a reversible carrier with swivel movement also. The locks of all these carriers are made of malleable iron and are very durable. A page of the catalogue is devoted to cuts of the different parts, which are numbered to facilitate the ordering of repairs. Full directions are given for putting up tracks and mounting and operating carriers. An improved portable stacking frame has also been devised to be used in connection with Strickler's Carrier. The catalogue further contains cuts of Hay Tool Equipments, such as Hooks, Hangers, Pulleys, Rope Hitches, Grapple Hay Forks, and Single and Double Dead-Lock Harpoon Forks.

R. Boericke & Co., whose factory and warerooms are at 495 to 503 Wells street, Chicago, issue an illustrated circular descriptive of their specialties. They manufacture the DePew Convertible Operating Chair, Physicians' Cabinets, Rolling Chairs, Patent Crutches, Commodes, Invalid Self-Propelling Chairs, Carrying Chairs, Back Rests, and a large variety of other mechanical appliances for the alleviation of suffering. A new style of Self-Propelling Chair made by them is operated by cranks and endless chains running over sprocket wheels. The cranks are on uprights attached to the arms and within easy reach of the operator, each crank working independently. This movement enables weak persons to propel the chair.

Rice, Born & Co., New Orleans, La., issue a pamphlet of about 100 pages devoted to the well-known Star and Crescent Plows and Plow Goods. In this catalogue the attempt has been made, and with gratifying success, to have embraced within its pages everything used in connection with the Plow, and they facetiously remark that everything except "the man and the muel" will be found in it. The book will thus be useful for reference. It represents a large variety of Cultivators. Clevises, Steel Shapes, and many miscellaneous articles in the lines referred to. It also contains a number of useful lists, tables of weights, numbers, &c., of different goods. Attention is called to the other lines handled by the house, including Stoves and Tinware, House Furnishing Goods, Builders' Hardware, Mechanics' Tools, Guns, Pistols, Ammunition, Cutlery, &c., Marine Hardware and General Hardware, Heavy and Shelf.

The Northern Refrigerator Company, Grand Rapids, Mich., have issued their illustrated catalogue and price list for the present season. It represents the principal features of construction of their Refrigerators and the different patterns which they are putting on the market. The front cover is unique and interesting, showing in pictorial form many scenes relating to the ice industry and the use of the Refrig erator.

The Corrugated Steel Nail Company, Springfield, Ohio, issue a price-list of their Corrugated Steel Nails, which are made of a depth of from ½ to 1 inch, with from 1 to 6 corrugations in the two smaller sizes and from 1 to 8 in all the others. These Nails or fasteners are put up in boxes of 1000 Nails, and are used, we understand, by many manufacturers of furniture, carriages and buggies, chairs and others. They are also put up for family use in boxes of 100 Nails for mending furniture, &c. It is to be observed that the price-list of the Corrugated Steel Nail Company is different from that of Pratt & Letchworth, Buffalo, N. Y., who manufacture similar goods.

Shepard Hardware Co., Buffalo, N. Y., have issued their export circular No. 30. In it illustrations are given of their Freezers, their White Cap, Scout, Lion, Sambo, Lookout, Star, Pluck, Cadet, Dude, Sport, Tiptop, Pet and Grit Pistols, and also of their Toy Banks and other goods, while attention is also called to other lines of their manufacture.

The Chapman Mfg. Co., Meriden, Conn., issue a large and attractive catalogue of Dog Collars and General Dog Furnishings of their manufacture. This department has recently been added to their business in Saddlery Hardware and Sleigh Bells, and the company have secured practical and experienced workmen for the manufacture of the goods. They refer to their styles as new, and to their purpose to keep before the trade fresh and desirable patterns. A large variety of Dog Collars are illustrated, together with Pug Harness, Kennel and Dog Chains, Dog Leads, Whips, Collar Name Plates, Locks, &c.

Morse, Williams & Co., of Philadephia, manufacturers of freight and passenger elevators, with branch offices in New York and Boston, have recently established an office at Richmond Va., in order to handle more satisfactorily their Southern trade, which has increased largely within a few years

TRADE TOPICS.

Promptness in Filling Orders.—A Hardwareman in Michigan referring to complaints which have been made by some of our correspondents in regard to delay in filling orders, advises us that in his experience there is little ground for this complaint:

My experience is that delays in filling and neglect in acknowledging receipt of orders are the exception. One firm with whom I have corresponded for ten years or more almost invariably reply by return mail on a printed postal: "Your order of (date) received, and will have our prompt attention." And the goods follow in reasonable time. well packed.

Hardware Travelers.—We have received the following excellent letter which bears upon the question which has been discussed by some of our correspondents—namely, the methods adopted by some traveling salesmen. We take especial pleasure in printing this communication, as it calls attention clearly and forcibly to the important place occupied by travelers, and to their ability and character and the judgment and skill with which they perform their difficult and responsible task:

Why all this discussion of traveling men? They are and ever will be a necessity, as long as there is competition in business, and who can deny but that they are of great benefit both to the seller and buyer? They bring their samples and lowest prices right before you, and should there be any errors, are prompt to rectify at their next visit, for a good traveler is as careful of his reputation as the largest business concern, for his friends on the road are his capital in trade. A merchant who is not able to say no to the solicitation of a too pushing salesman should be out of business, and the sooner the better for his creditors. The boys on the road are the pick and choice of the manufacturers' or jobbers' employees, and are selected for their more than average ability, good judgment, honesty, affability and the other good qualities you find in the average traveler. They are not (as some of your correspondents seem to think) sent out to sell goods because they are not able to hold down a three legged stool in the office. They are the staff of the firm, and on them, more than any one, depends the success of the business. It is a well known fact that the best business men to-day are retired travelers. The Hardware trade of the West to-day offers ample proof of this fact. I will venture to say, were the boys all taken off the road they would make the home guards hustle to retain their positions and business. Pardon brevity, but have an engagement to sell an old traveler, and time is money.

In regard to the same subject we have received the following from a correspondent in Missouri:

In your issue of April 17 "Down Easter" refers to inconsiderate and incompetent commercial travelers, and quotes from a correspondent that many a good man has made a leap in the dark by ordering goods he did not want and could not sell in order to get rid of one of these drummers Now, I have been merchant and traveler in the Hardware business 18 years, and will aver that the freedom taken by the commercial traveler is the result of ignorance in the business on the part of the merchant, who, to obtain information (especially when he first branches out), will ply the traveling man with questions, and he in time becomes free in intercourse with the said merchant, who having gained considerable knowledge in this manner is puffed up with the importance and knowledge gained and ignores the source from whence it came and snubs the traveling men. A merchant who is a gentleman and courteous in his bearing need have no complaints of the commercial traveler's impudence, but a merchant who endeavors to impress on the traveling man his great superiority and condescension in buying from him may expect something.

Selling to Consumers.—With reference to the practice of some manufacturers in selling to consumers we have the following from a New England hardware house, in which our correspondents call attention to a practice pursued by some manufacturers, which is very annoying to retailers:

I am very much interested in your series of articles for the benefit of the trade, and in regard to printed shipping tags I fully agree with your correspondent. But what shall be said of the manufacturer of whom you order goods sent direct to your customer, and then goes to work deliberately and quotes your customer (and even goes to see him) at same prices he sells you at. This, in my own case, has been done many times. Oh, they say, we sell only to large consumers who would buy direct, anyway. Nonsense; they make that a handle. Every one is a large consumer in their eyes. If they do not make a sale the mischief has been done by their quotations. There are a great many leaks in a retail business that have to be looked out for, and to sell goods at retail so close as some manufacturers think we ought to does not pay.

Window and Door Screens.

During the past year or two a number of new Window and door Screens have been put on the market to meet the demand for this line of goods, which has become a feature of summer trade. The present season Screens are substantially the same as those offered last season, the additions not being as numerous as for a year or two past. Considerable ingenuity has been put forth in devising the large variety of styles now before the trade, and there has been also a tendency to produce goods which can be sold at low prices. This, however, has been carried to such an extent that there is probably at the present time a reaction in favor of the better class of goods, as it has been found that some of the cheapest Screens were not in the long run as desirable a purchase as the better grade, which can be used for several seasons. The quality of the Wire Cloth in the Screens is also an important matter deserving the attention of buyers. While, as noted above, there are not many new styles on the market, some of the manufacturers have made improvements of more or less importance, and new features are thus incorporated in some well-known goods. Others have made additions to their variety of sizes. Competition in prices is very animated, and quotations are somewhat lower than last season, leaving, it is claimed, on most goods a narrow margin of profit. Trade is referred to by several of the manufacturers as somewhat later than last season, and it is thought that many buyers are deferring their orders until May, or even June. Some of the makers, however, refer to the volume of business this season as being even now somewhat ahead of last year. It is generally agreed that a very satisfactory business will be done during the season, as there has been an increasing demand for this line of goods.

E. C. Stearns & Co., Syracuse, N. Y., are offering substantially the same line of goods as last year. The only change they have made this season is in their Monarch Adjustible Window Screen. Last year the adjustment was secured by a small thumb-screw at each corner. This passed entirely through the side pieces and through a slot in the cross rails, so that the adjustment was secured by sliding the side pieces outward and inward as desired. This season they are making them with a spiral steel spring enclosed in each of the four slots, the pressure of which holds the side pieces at any required extension. A feature of this Screen which they refer to as very valuable and not possessed, to their knowledge, by any other made up adjusta-Window Screen on the market, is the fact of its sliding upon the grooved guides, allowing the window to be raised and lowered at will, without removing or disturbing the Screen in any way. This feature is described as doing away entirely with the necessity of taking the Screen out of the window, whenever it is desired to lower the sash, and to replace the Screen when the window is again opened. Their Stuart Window Screen Frame and also their Gem are made on the same principle

A. J. Phillips & Sons, Fenton, Mich., issue circulars describing the different patterns of Window Screens, Window Screen Frames and Screen Doors which they are manufacturing. This year they are making some new sizes of their Bonanza Window Screen. The new No. 7, which is 18 inches high and adjusts 26 to 32 inches in width, is referred to as particularly popular. They are also furnishing both their Bonanza and Perfection pattern of Window Screens, with spring adjustment where desired. They refer to the chief point of excellence in their spring adjustment as consisting in the large amount of spring they put in, and the fact that it operates freely in the open channel in the top and bottom rails of the Screen, thus insuring prompt and sure adjustment. Their Window Screen Frame for the coming season has been improved somewhat by doing away with the slot in the end of the side pieces and cutting away a small part of the tongue, so as to bring the end of one bar in direct contact with the body of the other bar. By cutting away this small section of the tongue it is pointed out that a shoulder is secured which prevents the Screen Frame from being shoved together any further, thus making it much stronger than their last year's pattern, while it also renders it unnecessary to fasten together parts of the Screen Frame in any way other than by tacking on the Wire Cloth. It is also mentioned that it may be taken apart and made to fit small windows if desired. This is alluded to as quite an important modification in this line of Screen Frames, which we understand has had much sale this season. The dowelled joint which they commenced to manufacture in connection with their Screen Doors last year, has proved a great success and is said to secure unusual strength and stiffness.

The Maine Mfg. Co., Fairfield, Me., are putting on the market the same line of Window Screens and Window Screen Frames as last year. Their circular relating to these goods shows clearly the special features of their construction, and gives excellent front and back views of the Screens.

The Queen Anne Screen Co., Burlington, Vt., advise us that their Screen Door, which was put on the market last year, has proved entirely successful and is meeting with a large demand this season. Their list illustrates their Finished Screen Door, Improved Window Screen Frames, Eureka Screen and Adjustable Queen Anne Screen, and a variety of Corners which they are manufacturing.

Paine, Diehl & Co., Philadelphia, Pa., advise us that the Screen they are putting on the market is the same as last year, as they do not see how it can be improved. They allude to the fact that there are now so many cheap Screens on the market and dealers are so desirous of advertising low-priced Screens, without regard to quality, that many persons have gone into the manufacture of Screens which are of little use. They state, however, that there is now a reaction, as noted above, and that the better class of Screens are being used and sold, and in some cases at a higher price than last season. Their circulars illustrate the different patterns of these goods which they are manufacturing.

The American Screen Company, Brookline, Mass., issue a number of circulars illustrating and giving information in regard to their American Metallic Screens. They are making a metal frame Screen which slides or runs in metal slots or guides that go on to the outer stop-bead of window-casings between the sash and the Screen. The company allude to this Screen as exceptionally neat and light, and emphasize its quality. They use netting specially made for them by the Clinton Wire Cloth Company. They state also that their business has doubled in one year and that the demand has been very large the present season. They have also reduced their prices, having made important improvements in machinery.

John W. Boughton, 1207 Chestnut street, Philadelphia, issues circulars illustrating the extensive variety of Window Screens and Window-Screen Frames and Wire Screen Doors of his manufacture. These are substantially the same as those of last season, with which the trade are familiar.

We are advised by A. L. Benedict, New Canaan, Conn., that he has made several minor improvements in the manufacture and putting up of his patent Screens. A reduction of 20 per cent. has been made in the price of the goods. A full description of the special features of these Screens, which are mounted on Hartshorn Spring Shade Rollers, and roll up and down like shades, is given in circulars. It is explained that the cloth used for the Screens is not wire, and will not rust out as wire is liable to do, and is on this account much more durable. These Screens, we are advised, have been received with much favor, Mr. Benedict having double the orders now on his books which were entered last year at this time.

The Porter Mfg. Company, Burlington, Vt., advise us that they have made no change of style in either Corners or Sticks. This year they have, however, introduced two extension Screens, the Adirondack and Way's Center Extension, which have met with a very gratifying reception from the trade. Trade is referred to as satisfactory, and the prospects for large second orders are regarded as very favorable.

Edward Darby & Sons, 231 Arch street, Philadelphia, Pa., are in the market as usual with their Screen, which is illustrated in their advertisement on page 77.

E. M. Porter & Co., Burlington, Vt., issue a price list of Porter's Patent End Extension Window Screens, Corner Irons and Centers and Door Frames, in which illustrations, brief descriptive text and prices are given. Mr. Porter was a pioneer in the Window Screen and Corner business, and calls attention to the large sales, principally in New England, which these goods have met.

REVIEW OF THE WHOLESALE MARKET IN PAINTS AND OILS.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

Paints and Colors.

Business in the general line of Paints and Colors has been quite lively the past week. The labor question has doubtless had the effect of restraining purchases of house painters' goods somewhat, yet imperative wants for immediate consumption kept a steady run of orders from retailers and boss painters, those from the local and nearby trade showing a remarkably full total. The outlook is favorable for equally as good results right into the midsummer season, as building operations promise to be on a large scale. Changes in values have been comparatively few and unimportant outside of Quicksilver Vermilion, which is 2¢ higher, and Paris Green, on which there has been an advance of 1½¢ ℔ lb.

White Lead.—Corroders state that their deliveries the past week have been larger than during any corresponding period this season, and manufacturers of second and third qualities (adulterated Lead) make a similar report. Jobbers' statements are quite in harmony with those made by manufacturers of the pigments. No changes in prices have been made, but the general market shows increased firmness under the influence of the good trade referred to and the enhanced cost of Pig Lead.

Colors.—Manufacturers' prices for Quicksilver Vermilion have been advanced to 70¢ for bulk, 71¢ for bags and 75¢ for smaller packages. The advance is due to enhanced cost of Quicksilver. The Paris Green Association have advanced their prices for the insecticide as follows:

	Lots of 1 ton or over.	Lots less than 1 ton.
Arsenic, kegs or casks.	14 ¢	14½¢
Kegs, 100 to 175 pounds	14½¢	15 ¢
Packages, 14, 28, or 56 pounds	16 ¢	16½¢
Paper boxes, 2 to 5 pounds.	16 ¢	16½¢
" 1 pound	16½¢	17 ¢
" ½ "	18½¢	19 ¢
" ¼ "	20½¢	21 ¢

Outside brands of the Green are quoted at the same figures. Deliveries are free and the general situation not only favorable to continued firm prices, but indicative of a further advance later on. On other colors there have been no important changes during the week. Prices are steady all through the line of house painters' goods and grinders' stock. Business has been of very good volume.

Zincs.—American Zinc, white, has been distrioted more freely, and manufacturers report a rather better trade also. The lower grades are yet slightly irregular in price, but prime and choice qualities are firm at old figures. Foreign Zinc is unchanged and meets with about the usual sale in moderate quantities.

Miscellaneous.—The position of Chalk is unchanged and there is no change to speak of on Whiting, Paris White or Clays. Business in the several commodities is of about the usual character.

Oils and Turpentine.

A brisk movement of Linseed Oil from first brands and a further considerable movement of Cotton Seed Oils have been the most prominent features in this line. It is to be remarked that some improvement has taken place in the sales of Fish Oils, and the general market has shown rather more spirit this week than for some time past. The increased sales of Fish Oils have been chiefly for export account, but home consumers' purchases alone make up the improvement in other lines. Speculation has cut no figure at all and the changes in prices that have taken place are due wholly to legitimate influences.

Linseed Oil.—City pressers have had a busy week, and with the cost of crude material higher and the distribution of Oil quite brisk, prices are very firm. No advance has been made, however, on 62¢ for domestic and 64¢ for Calcutta seed product. Out of town stock is still picked up at 60¢, but in moderate quantities.

Cotton Seed Oils.—There have been quite extensive purchases of both crude and refined products for direct shipment from the mills to large Western consumers. Spot business makes merely a fair showing, however, but prices here have continued to move upward in sympathy with enhanced cost at the South, and the market is unmistakably strong with indications of a further rise. Supplies are under very close control. Last sales were at 32½¢ for prime crude and 36¢ @ 36½¢ for prime Summer Yellow.

Lard Oil.—Prices for prime city have ruled somewhat irregular within the range of 53¢ @ 54¢, being influenced by the course of the market for raw material. There has been quite a good business, however, and the market showed rather better tone at the close.

Fish Oils.—Exporters have taken 1000 barrels crude Oil here, and at New Bedford about 350 barrels crude Sperm were taken at 65¢, and 1500 barrels crude Whale at 43¢. There has also been a sale of crude Whale in the Eastern market; manufacturers have purchased 800 barrels Sperm and 200 barrels Whale. The manufactured goods have had rather better movement in jobbing quantities at about the prices current for two or three weeks past.

Cocoanut Oils.—Ceylon has had rather better sale and the market is stronger with 5¼¢ @ 5⅜¢ now quoted for stock on spot or to arrive at an early date.

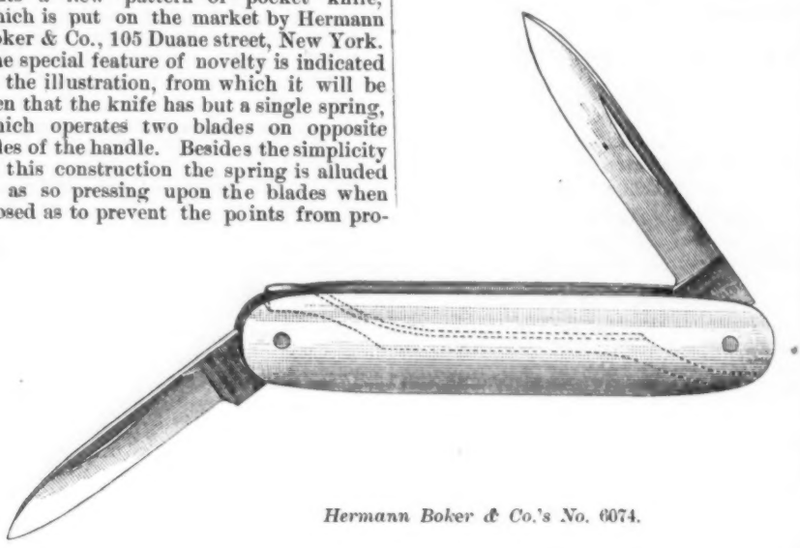
Spirits Turpentine.—Operations in this line have been on a rather moderate scale, and little change in the condition of the market here or in the South has taken place. Local business has been chiefly at 38¼¢ @ 38½¢ for spot stock. In first hands there is a supply here of 550 to 600 barrels. The stock in the principal Southern markets aggregate about 8500 barrels.

A contract was made on Tuesday by which the United States Government Ordnance Works of Boston will be moved to East Chattanooga, Tenn., at once. The company gurantee to put in works to cost $300,000 and employ over 5000 skilled mechanics. Competition of cheap Southern iron forced the removal.

The new tube mill which the Coe Brass Company, at Torrington, Conn., are just completing, is pronounced to be the finest building of its kind in the country. The side walls are of cut stone and the roof is made of iron designed and built by the Berlin Iron Bridge Company, of East Berlin, Conn. The roof trusses are of sufficient capacity so that machinery can be moved from any part of the building by means of the trusses, and it is also designed to use the roof trusses in raising the rolls in and out of the housings instead of using a traveling crane.

A New Pocket Knife.

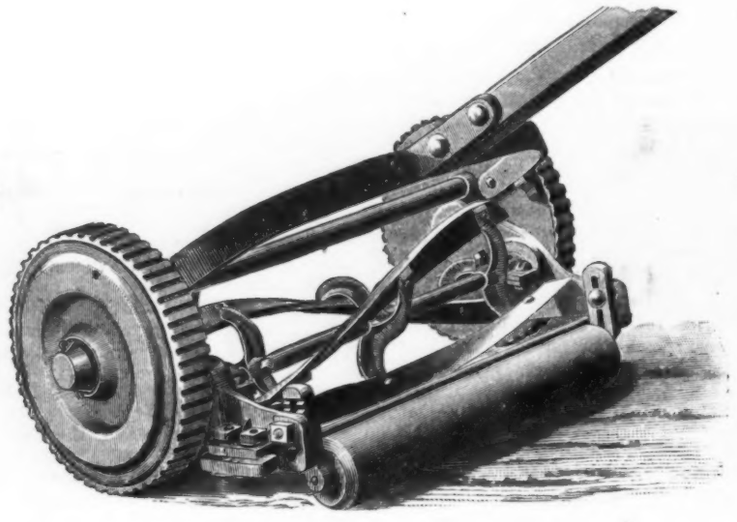
The accompanying illustration represents a new pattern of pocket knife, which is put on the market by Hermann Boker & Co., 105 Duane street, New York. The special feature of novelty is indicated in the illustration, from which it will be seen that the knife has but a single spring, which operates two blades on opposite sides of the handle. Besides the simplicity of this construction the spring is alluded to as so pressing upon the blades when closed as to prevent the points from projecting and injuring the pocket. This knife in white bone is designated by Hermann Boker & Co. as No. 6074. It is also made in stag. It is sold at a price which justifies its being retailed at 25 cents.



Hermann Boker & Co.'s No. 6074.

Rowlett's Champion Lawn Mower.

The Champion Mfg. Company, Richmond, Ind., direct special attention to the important points of merit in their Rowlett's Champion for 1890. The patented pawl is described as carried around the reel shaft in the body of the pinion, always intact, with a five-sixteenth catch on the ratchet, and having no sharp points to wear off. The adjustable reel box, by a block screw tension, and the adjustable cutting bar blade, by a lock nut tension, are said to be exceptionally complete and efficient, and that grass can be cut to within $\frac{3}{4}$ inch of the ground up to $2\frac{1}{2}$ inches. The malleable iron reel arms are capable of great strain without breaking, while the blades are of the best spring steel, tempered by an improved process. The malleable clamp for attaching the turned handle to the tongue, it is claimed, overcomes all objections to shrinkage of tenon or bending of bolts. The braces attaching the handle to the mower are steel, combining strength and lightness of weight. Especial attention is called to the fact that every part being interchangeable, repairs can therefore be obtained at any time. They are made in the usual sizes, viz., 10 to 20 inches wide.



Rowlett's Champion Lawn Mower.

The Spiral Weld Tube Company, of East Orange, N. J., have issued a very interesting monograph on spirally welded steel pressure tubes, containing opinions by James C. Bayles, Dr. H. W. Raymond, James A. Burden, Edward W. Coit, Prof. R. H. Thurston, Henry R. Towne, George Burnham, Jr., S. T. Wellman, S. W. Baldwin, A. C. Walworth, John A. Price and W. S. Mallory.

The adoption of a 60-cent through rate via the lakes between St. Paul and New York causes much rejoicing in the Twin Cities. The reduction amounts to 21 cents per 100 pounds on first-class merchandise, and a corresponding reduction on other classes, which is said to be the lowest point at which the traffic can be done. It is but a brief period since the through rate between Chicago and St. Paul was much higher than the highest rate contended for by the Great Northern line between St. Paul and New York. At that time the railroads operating between Chicago and St. Paul charged more for that haul than they are now willing to charge for the entire distance to the seaboard.

Surprise Dashboard Lantern.

The Ohio Lantern Company, Tiffin, Ohio, are just introducing a new combination lantern, of which they are the manufacturers, under the name of the Surprise, illustrations of which are given herewith. This lantern is especially adapted tor attaching to carriages, express wagons and all vehicles with which a light is required; can be used for lighting halls, lawns, stables, &c., or as an ordinary lantern to carry in the hand. There is an automatic arrangement for raising the globe and holding it in position for lighting, as shown in the cut. The reflector is corrugated upon the reflecting surface, increasing the intensity of the illumination. A compound spring for clasping the lantern to the dash is fastened to the back of the reflector, the reflector being permanently fastened to the body of the lantern. The manufacturers call attention to the fact that these lanterns are well made and durable, and are finished either plain or in japanned colors.

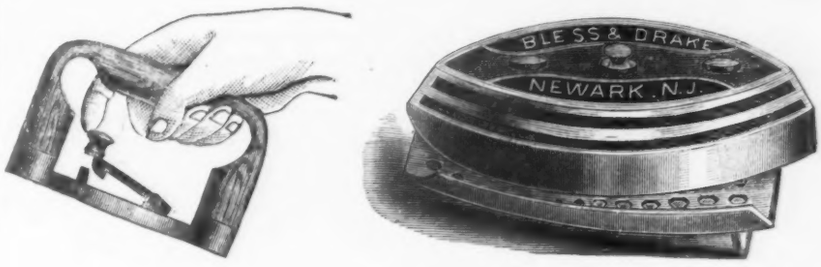
The "Surprise" Dashboard Lantern.

Lantern in Position for Lighting.

A Gigantic Sheet-Metal Statue.

W. H. Mullins, successor to the firm of Bakewell & Mullins, Salem, Ohio, has lately completed a sheet-metal statue of very large dimensions, representing the German hero Arminius or Hermann, who drove back and slaughtered the Roman legions under Varus. The finished statue which is over 35 feet high, measuring from the foot to the point of the sword, is to be erected at New Ulm, Minn., and will stand on a pedestal of elaborate architecture and appropriate hight. The figure is made of sheet copper ranging from 24 ounces to 4 pounds. The seams are all countersunk and riveted and the statue itself is supported on a strong framework of iron. The artistic features of the work are clearly presented in the accompanying engraving and by means of the figure of a man at the side its large proportions will be readily comprehended. The manufacturer informs us that he believes he is safe in saying that the statue of Hermann is the finest piece of work of the kind ever attempted on this side of the Atlantic. The colossal figure of Liberty in New York Harbor, which also is of sheet copper, as our readers know, was executed in France and so of course would not come in competition with the one we illustrate. The modeling of the figure here shown was done by Alfonz Pelzel, and the magnitude of the work will be realized when it is stated that about 20 tons of clay was used in the model and that the roof of the building in which the modeling was done had to be taken off and an annex added to make room for the construction of the figure. Mr. Sam West and Mr. W. L. Tucker, as assistant, had entire charge of the statue from the time the sheet-metal work was begun until its completion a short time since.

A Gigantic Sheet-Metal Statue.



Ideal Iron.

Ideal Iron.

Bless & Drake, Newark, N. J., are manufacturing the improved sad-iron shown in the accompanying illustrations, which represent the construction of the handle and the form of the iron and stand. The handle is made of bent wood and is easily grasped, its strength being especially referred to. The manner in which the handle is attached and released from the iron will be apprehended from the engraving. The catch and spring are independent of the handle, which is alluded to as making them reliable, even should the handle work loose, which, however, is not likely to occur. The easy action of the catch and the tightness of the hold secured and the fact that the irons are solid and not hollow, and will, therefore, hold the heat longer, are points also made by the manufacturers. These irons are well finished and are referred to as cheaper than any others of equal finish. They are made both double-pointed and square backs.

Hartman Steel Picket Tree Guard.

Hartman Mfg. Company, Beaver Falls, Pa., are manufacturing the article above named, which is represented in the cut given below. This tree guard is described as made entirely of heavy steel wire, either galvanized or painted with best quality rust-proof paint. The spiral wire coils for attaching this guard to the tree are referred to as absolutely elastic and freely expand with the growth of the trunk, while they wholly prevent, it is claimed, any friction or chafing of the tree against the guard during storms or high winds. The manufacturers state that wooden boxes and similar rigid styles are liable to seriously injure or retard the growth of trees aside from harboring insects that are known to be the worst enemies of maple and other shade trees, while they are clumsy and unsightly and require frequent repairs and painting. The guard admits the sun and light freely to the roots of the tree and can be elevated sufficiently to allow the mulching and cultivating of

Hartman Steel Picket Tree Guard.

growing trees. The pickets are so close together that even rabbits are prevented from inflicting damage. These guards, we are advised, are offered at a price but little more than the wooden tree box, and their strength, neatness and durability are referred to.

The Convex Coal Sieve.

The Lock Haven Sifter Company, Lock Haven, Pa., are manufacturing the convex coal sifter, which the cut represents, and

The Convex Coal Sieve.

refer particularly to the convex bottom. This shaped bottom is to prevent ashes accumulating in the center while sifting, thus doing away with the objections to the flat bottom sifter. It is described as made of the best No. 26 sheet metal, and the bottom being double seamed to the side, making a strong and durable sifter. The cast ears for holding the handle are riveted on, one being square on the inside to prevent the handle from turning. Though not being put on the market until late last fall, the manufacturers speak of its meeting with much favor, and are anticipating a large sale this year.

Moody Steel Anti-Friction Door Hanger.

In the accompanying illustrations we represent the Moody Steel Anti-Friction Door Hanger and Rail as now put on the

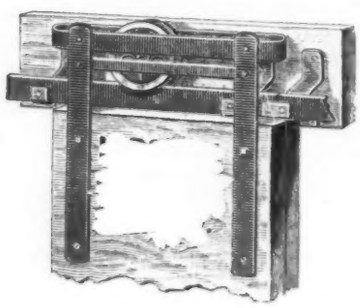


Fig. 1.—Moody Steel Anti-Friction Door Hanger.

market by the Victor Mfg. Company, Newburyport, Mass., some recent modifications having been made in it. This hanger is designed to run on the edge of ordinary bar iron or steel, or upon any of the different makes of bracket track now

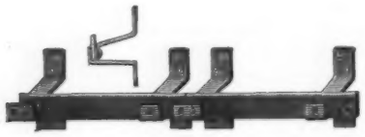


Fig. 2.—Moody Braced Bracket "B. B." Steel Rail.

in use. The frame is described as made entirely of steel, and its strength, compactness and neatness of appearance are referred to. The wheel has a steel axle and is deeply grooved to prevent derailment, and the manufacturers allude to its easy and noiseless movement and point out that no oiling of the journal is required and that its application to the door is very simple. The Moody braced bracket "B B" steel rail which is used in connection with this hanger is shown in Fig. 2, and the cut represents two lengths united. It is stated that the brackets brace each other, one being attached on the outside and the other on the inside of the track rail, with the rail between, thus guarding, it is claimed, against lateral movement in either direction and preventing any twist in the rail bar. When two or more lengths are joined together the manufacturers' special lock joint insures, they state, a perfectly straight line run with no possibility of displacement from any cause, a result which is referred to as not possible where rails attached to separate brackets abut, no matter what the shape of the ends employed. The track is made of open hearth steel, brackets included, and can be used with other hangers than the Moody. These hangers are made in two sizes, No. 5 and No. 6, the former having 3¼-inch wheel and running 6 feet, and the latter having 4½-inch wheel and running 10 feet.

New Measuring Rod.

The Buffalo Scale Company, Buffalo, N. Y., are putting on the market this article, which is illustrated herewith. The engraving presents a clear idea of the construction of the appliance and the manner in which it is operated. It will be observed that by pulling down the chain shown raises the indicator and thus determines the hight, which, having been ascertained, the chain is released when the indicator, to which a weight moving up and down through the tube is attached, drops down to the bottom of the rod. The measuring rod is described as made entirely of brass, nickel plated, and the simplicity of its construction and its adaptability for the purpose for which it is designed are obvious. The scale shown, it will be seen, is graduated from 4 feet 3 inches to 6 feet 3 inches.

The resources of "The Nearer Northwest," comprising that portion of the province of Ontario lying between Lake Nipissing and the Manitoba boundary, are extolled by the Dominion newspapers. Besides copper and nickel, the latter in extraordinary abundance, on the Atikokan River, there are rich ranges of ore suitable for the Bessemer process, some portions of which have been leased to United States operators, on royalty, with guaranteed minimum output. Analyses of samples show 65 to 69 per cent. of metallic iron with barely 0.06 per cent. of sulphur and phosphorus almost unappreciable. This can be shipped to the United States at a profit, in spite of the duty of 75 cents per ton. The board of trade of Port Arthur, in its annual report, says: 1,000,000 tons of ore per annum will be shipped from the mines when railroads are built.

The Parker Extension Handle.

The article illustrated herewith, manufactured and put on the market by A. C.

New Measuring Rod.

Parker & Co., Memphis, Tenn., is a device for lengthening the handles of brooms, brushes, mops, etc. The galvanized iron socket receives the handle and holds it in place by the thumb-screws on either side, accommodating a larger or smaller handle as the case may be. It is intended to do away with the old and unsatisfactory method of tying a stick to a handle when washing windows, sweeping walls, removing cobwebs, dusting pictures, &c., and will doubtless be appreciated by those who have long felt the want of something of this kind. The extension handle is about

The Parker Extension Handle.

6 feet long, strongly made and well adapted for the uses intended.

Winne & Jackman, 228 Lake street, Chicago, have issued a very neat little pamphlet which will prove quite a convenience to local consumers of steel. It is a stock list of the various sizes and grades of steel manufactured by Howe, Brown & Co., which are now carried in the warehouse of the firm named, who are general Western agents. The stock, as shown by this list, is remarkably large and complete. Tables are also given showing the weight of bar steel per foot, all sizes, in square, round, octagon and flat shapes. Numerous testimonials are printed from leading steel consumers of the Northwest. The stock comprises fine tool steel, special tool steel, crucible spring steel, crucible plow steel and soft steel-center plow steel.

Bolt and Lock Indicator.

The Trenton Indicator Bolt and Lock Company, Trenton, N. J., are offering to the trade an indicator in connection with bolts or latches, the combination being for use in hotels, railroad cars, steamboats, dwelling houses, public buildings and elsewhere. The uses as set forth by the manufacturers are, that while intended especially for bathrooms, toilet rooms and water-closets, there are many other places where it may be used to advantage. The indicator in connection with its bolt enables a person to determine by a glance at the door whether the apartment to which it is attached is occupied (door bolted inside), as shown in Fig. 1. The device does not require a special pattern of bolt or lock; any standard pattern may be adapted. Fig. 2 shows how latches are adapted; the casting being cut away on each side to allow the pin to slide back and forth. These are furnished by the company with the indicators. When a bolt is used the pin is fastened in the same manner, as shown in Fig. 2. Bolts are shown in their catalogue in a variety of forms. In either case the pin passes through the door to engage the cam. Fig. 3 represents the rear view of the indicator, and shows the mechanical working. The pin in the bolt or latch, working in the curved slot in the eccentric or cam, raises the letters to view when the door is locked, or allows them to be hidden when the bolt is withdrawn. These goods are made in either solid brass, solid bronze or nickel plated.

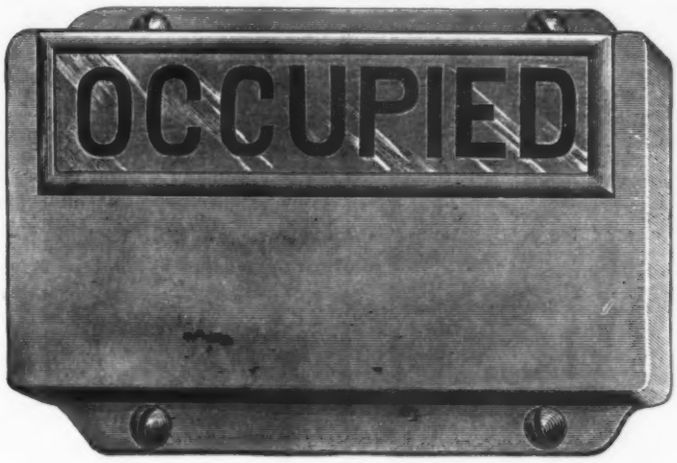


Fig. 1.—Indicator Showing Apartment "Occupied."

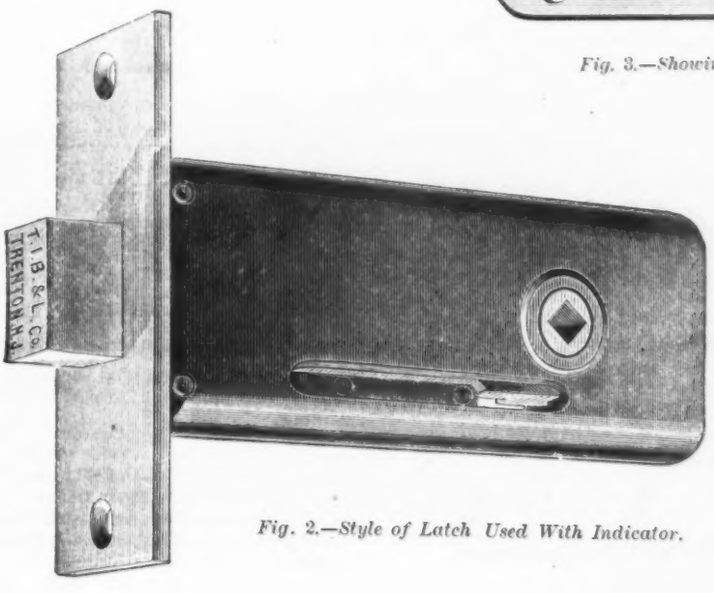


Fig. 2.—Style of Latch Used With Indicator.

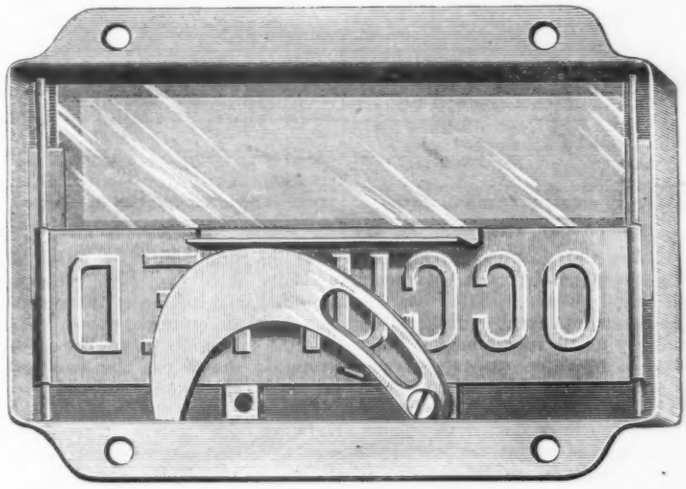


Fig. 3.—Showing Sign Plate Drawn Down.

The Bailey Spring Wire Brush.

The Bailey Mfg. Company, Hartford, Conn., are introducing a spring wire brush, intended to take the place of a curry comb. It is represented in the illustration given herewith. The brush contains nearly 4000 fine wire teeth, set absolutely even at the outer points, and is made with both polished brass and galvanized iron backs, with black enameled wood handle. The manufacturers state that while the "old curry comb" converts the dirt—to be removed from the animal—into fine dust and thoroughly mixes it with the hair, the new brush brings the dirt to the surface whole, doing away with dust entirely. It is equally well adapted for cleaning the mane, tail and legs without pulling out the hair or being unpleasant for the animal being groomed. When loose hair accumulates in the brush it may be instantly removed with the double pointed wire hook accompanying the brush. Testimonials received by the manufacturers state that the brush has been used on sensitive horses who would not allow the free use of any curry comb because of the irritation caused.

Bailey Spring Wire Brush.

The fifth of the McDougall type of iron vessels has been launched at Duluth. No. 105 is about 280 feet long and 36 feet wide; registered tonnage, net, 1,230.69 tons. She will carry about 3000 tons, and costs $85,000. No. 106, which is now under construction, will be the first steamer of the whaleback pattern ever built, and her career will be watched with great interest all along the lakes where "McDougall's dream" is no longer laughed at. According to the Duluth *Herald* the engines for the 106 will be Hodge's steeple compound, the high pressure cylinder 46 inches and the low pressure 50 inches; stroke, 42 inches. The wheel is a 12-foot Hodge pattern. The engines are built for work and will not have any gingerbread stuff about them. The boilers will be of the Scotch type, 14 feet diameter by 11.6 in length.

A contract for 100,000 feet of 2-inch iron or steel pipe for electric conduit, for the city of Chicago, was awarded on the 3d inst. to James B. Clow & Son, of Chicago, for $10,800, they being the lowest bidders.

The Reading Company has contracted for fifteen sea-going coal barges of a capacity of 1800 tons each, to convey coal between Philadelphia and New England points. They will be towed by steam colliers.

Champion Transom Lifter.

The Dickson's Champion Transom Lifter, made by the Palmer Mfg. Company, Troy, N. Y.. as shown in the accompanying illustrations, is referred to by the manufacturers as having the following especial advantages: It is easy of application and needs no further attention; all bearings are perfectly fitted, and are solid and substantial. The locking screw, holding the rod in position, is a positive clamping device; is non-detachable; will never wear the rod; makes unnecessary any holds or notches, as it positively fastens in any position. The point is specially emphasized that it is universal in its adaptability to all requirements, as in its one form it operates sashes centrally pivoted, and swings out or in those hinged at either top or bottom, swinging the transom either in or out of the room, and in every case for right or left hand. This universal adaptability is spoken of as being advantageous to the merchant, as while he has one of the Champion Lifters on hand he has one that will meet all requirements. These are made in the regular sizes and the various styles of finish.

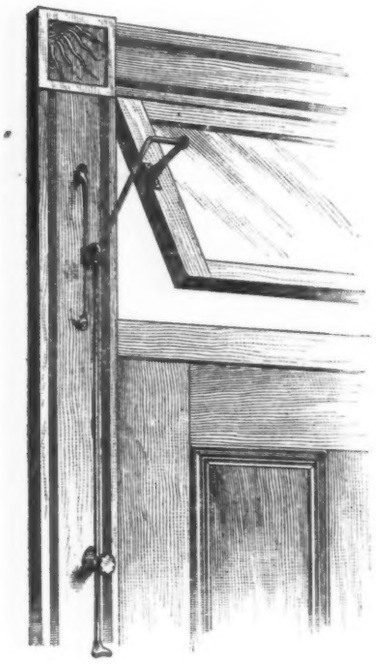


Fig. 1.—The Champion Transom Lifter.

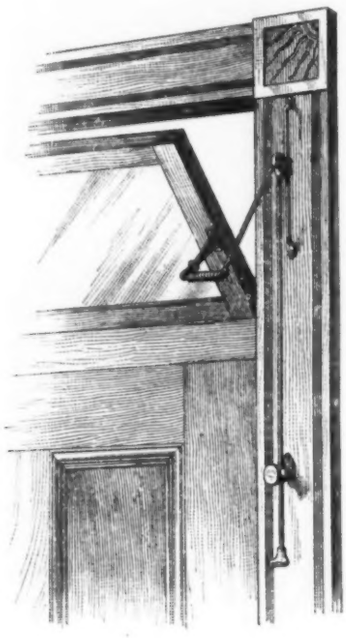


Fig. 2.—Hinged at Bottom.

An important step has been taken by the Schlesinger ore syndicate. They have closed a contract for the construction of a railroad from Iron Mountain to Escanaba, Mich., which will give the Menominee range mines a second transportation line. While the new road is intended primarily to handle the product of the Schlesinger group of mines on the Menominee range, it will of course handle all the other ore it can get and will thus be a prominent factor in the ore traffic of that range in the year 1891.

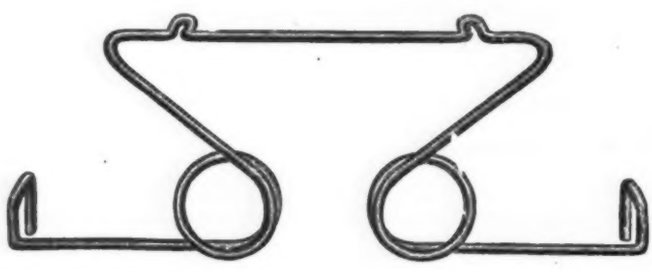


Fig. 1.—Wagon Seat Spring.

Patent Wagon Springs.

The Vehicle Spring and Mfg. Company, Cincinnati, Ohio, are placing before the trade generally several styles of patented vehicle springs of which they are sole owners, of which illustrations are given herewith. Fig. 1 illustrates their wagon seat spring, made by coiling a single piece of round crucible steel of great elasticity into the form shown, being provided with two eyes, through which $\frac{5}{8}$-inch carriage bolts are passed in fastening it to the seat. To place the seat in position on the wagon the two seat hooks shown at the lower ends of the spring are hooked over the edges of the wagon body, or side boards, thus doing away with the usual malleable fittings used with the ordinary elliptic springs. After the springs are formed, they are tempered in oil and tested to 500 pounds capacity. Fig. 2 shows the spring attached to a wagon seat. These the company manufacture for the trade in connection with their springs. These seats, provided with heavy corner irons, are 12 inches wide, of any length desired, painted, striped and varnished, or unpainted. Especial attention is invited to the light weight of seats to which these springs have been applied, ranging from 33⅓ to 50 per cent. less than the ordinary style. Fig. 3 illustrates a patent Bolster spring, made for loads ranging from 800 to 7000 pounds. The springs of the smaller carrying capacity mentioned being made single by omitting the central set; those of the greater capacity being double as shown in the engraving. Fig. 4 represents another style of Bolster spring, the Blaine patent, for loads varying from 1200 to 10,000 pounds. The company allude to the fact that either of the springs referred to can be placed in position on any ordinary vehicle without difficulty or extra expense, and that by their use a load will pull fully 20 per cent. easier than without them. Being made of one continuous piece of steel, without hole, joint, weld or rivet, they are described as possessing great strength, combined with lightness in weight, and not liable to get out of order easily. It is stated that the percentage of breakage has been proven by actual tests to be less than ¼ of 1 per cent.

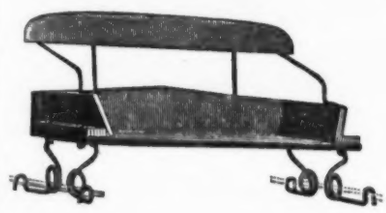


Fig. 2.—Seat With Spring Attached.

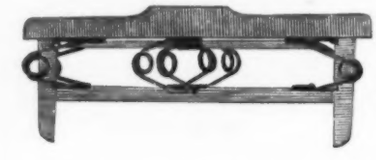


Fig. 3.—Patent Bolster Spring.

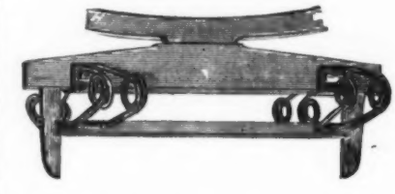


Fig. 4.—The Blaine Patent Bolster Spring.

As showing the preponderance of New York in the foreign trade of the country, it is interesting to note the entries and shipments of merchandise at the leading ports during the month of March:

	Imports.	Exports.
New York	$43,636,923	$28,485,254
Boston	5,497,065	6,133,350
San Francisco	4,865,988	2,983,260
Philadelphia	4,398,668	3,173,057
New Orleans	1,401,248	12,004,811
Chicago	1,150,513	1,415
Baltimore	1,045,556	8,273,496

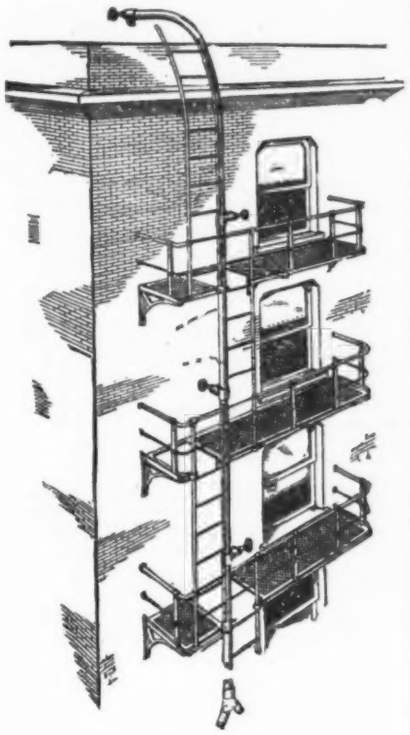
If the specie were added the exports at New York would be increased nearly four millions.

Enterprise in Salt Lake City has taken a new start since the Gentile triumph at the polls. No less than five syndicates are seeking to replace the present water works system.

British shipping prospects are no better, and builders complain. A Liverpool paper says the tonnage under construction is only about one-half of the ordinary amount, and that most of the yards will be empty a year hence if the recent decrease continues.

A New Stand Pipe Fire-Escape.

An illustration is given herewith of a stand pipe fire-escape of new design which has been brought out by the Union Foundry Works, 614 First National Bank Building, Chicago. This fire-escape consists of a stand pipe with ladders and balconies, supported by brackets firmly anchored in the wall. The railing consists of gas-pipe or round iron with either cast or wrought posts. The standard size of the platform is 26 inches in width by 6 feet in length, covering the whole of an ordinary window. The special features of this stand pipe, which is covered by patent, is the arrangement of the ladders. It will be seen that each ladder extends but one story, and that the man-hole is at one side of it, at the bottom of each flight. In the ordinary fire-escape the ladder is continuous from top to bottom, and the man-holes are all in line directly in front of the ladder. The new arrangement avoids the danger of falling from the



Stand Pipe Fire-Escape.

ladder further than one story, and also the risk of persons being swept off the ladder by others falling from above. Fatal accidents of this kind occurred at the recent *Tribune* Building fire at Minneapolis. The water connections in this stand pipe consist of brass automatic Siamese at bottom, with brass valves at each floor and at roof.

Architectural Sheet Metal Works.

Fred. F. Bischoff & Co., proprietors of the Northwestern Architectural Ornament and Statuary Works, Chicago, have just issued a highly creditable catalogue of the designs which they are now prepared to furnish to the trade. The catalogue comprises 144 pages and covers a large variety of designs of sheet metal ornaments. Zinc is the material commonly used, but copper and brass are equally applicable, and are occasionally employed. Statues of Liberty, Justice and Law are shown in this catalogue, which the firm are prepared to turn out in heroic size, 10 feet high. They are well executed, being the work of most skillful designers. Other figures, such as eagles, boys, &c., are shown. Relief panels of mythical creatures, leaf and scroll work, and human and animal heads are shown in varied forms of ornamentation. Flanges and moldings and friezes are of highly artistic patterns. Special attention has been given to sheet metal ceilings, and a number of very rich and effective designs are shown. Many pages are devoted to center pieces, rosettes, leaves for brackets, leaves for garlands, and fancy pieces intended for miscellaneous ornamentation. Gargoyles are shown in numerous patterns. Rock face, frieze for bay windows, drapery for mansard decks, crestings, molding enrichments, scrolls, finials and capitals all evince originality, boldness of treatment and remarkable wealth of creative talent. This establishment has been in existence but a little more than a year, and in that brief period has managed to work up an extraordinary number of designs, as shown by this catalogue. The firm are now in a position to undertake to make special patterns after drawings furnished them, employing some of the best designers and modelers available, and having a large force of skilled workmen. They also manufacture spun goods and metal balls. Most of the articles shown in the catalogue are carried in stock and can be shipped on short notice. The works are at 83 and 85 West North avenue, and the office and warerooms at 24 and 26 West Lake street, Chicago.

PROVIDENCE NOTES.

The Brown & Sharpe Mfg. Company have commenced an extensive addition to their works on Promenade street at a cost of $4000.

There has been made, and is now being finished at the tannery of the James Davis Belting Company, of Pawtucket, a large belt for the new works of the Gorham Silverware Mfg. Company, of this city—their main belt. It is of oak tanned leather, 118 feet long, 40 inches wide and ⅛ inch thick, and though not the largest belt ever made by this concern, it is yet a "pretty considerable sort of belt," and will be ready for shipment in a few days.

The Legislature has appropriated $10,000 for the celebration of the cotton centenary, to occur in the coming September. This appropriation from the State supplements one made by the city of Pawtucket of $10,000.

E. Kenyon & Son, of Kenyon, R. I., are enlarging their boiler room preparatory to putting in another boiler of 100 horse-power.

The King Iron Bridge Company, of Cleveland, Ohio, have been awarded the contract for a bridge across the Warren River at Warren, R. I., the figures agreed upon being $21,953.

An electric light plant is to be erected on Block Island. Eighty lights have been contracted for.

One of the most flourishing manufacturing establishments in this State is the printing press works of C. B. Cottrell & Sons, at Westerly. This firm began the manufacture of cotton and wood machinery and printing presses in 1855, and in 1861 began the manufacture of woolen machinery. During the war they made gun appendages, supplying largely those used by the Springfield Armory and private armories. In 1868, when the firm began to make a specialty of printing presses, Mr. Cottrell commenced a series of patented improvements which brought their presses prominently to the front. Among the first of these was the improvement on the air spring for reversing the bed, with its yielding plunger, vacuum valve and governor attachment. The tapeless delivery to drum cylinder presses, the positive slider motion, hinged roller frame, the new front delivery for two revolution, stop, cylinder and lithographic presses, and numerous other inventions, have been covered by American and foreign patents in the interest of this concern. Numerous additions have been made to the works from time to time, until now there are ten buildings in use, with a floor space of at least 15,000 square feet. The land has a river dock front of about 1000 feet. The foundry is one of the largest in the State and is furnished with all modern improvements, including a Yale & Towne power traveling crane, with a capacity of five tons. The engine room is furnished with 175 horse-power boilers of the Babcock & Wilcox make. About 300 men are employed. LEONIDAS.

The Muncie Architectural Iron Works, Muncie, Ind., write us that their new shops at the point mentioned have been completed and have been furnished throughout with the most improved machinery, and state that the outlook for business is very promising, having enough orders ahead to keep them running to their full capacity for the next two months. The members of the firm being both practical men, with long experience in the business, enables them to execute and produce the best of work.

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CURRENT HARDWARE PRICES.

MAY 7, 1890.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

Adjusters, Blind.

Domestic.....₱ doz $3.00, 33⅓%
Excelsior.....₱ doz $10.00.....50&10&2%
Washburn's Self-Locking.....20@20&10%

Ammunition.—

Caps, Percussion, ₱ 1000—
Hicks & Goldmark's and Union Metallic Cartridge Co.
F. L. Waterproof, 1-10's.....34@35¢
E. B. Trimmed Edge, 1-10's..46@48¢
E. B. Grnd. Edge, Cent. Fire, 1-10's.....46@47¢
Musket Waterproof, 1-10's.....50¢
G. D.....28¢
S. B. Genuine Imported.....45¢
Eley's E. B.....54¢ @ 55¢
Eley's D Waterproof, Central Fire...$1.60

Cartridges—
Rim Fire Cartridges.....50&5&2 %
Rim Fire Military.....15&2 %
Cent. Fire, Pistol and Rifle.....25&5&2 %
Cent. Fire, Military and Sporting.....15&5&2 %
Blank Cartridges, except 22 and 32 cal., additional 10 % on above discounts.
Blank Cartridges, 22 cal., $1.75.....2 %
Blank Cartridges, 32 cal., $3.50.....2 %
Primed Shells and Bullets.....15&5&2 %
B. B. Caps, Round Ball, $1.75.....2 %
B. B. Caps, Con. Ball, Swgd., $2.00.....2%

Primers—
Berdan Primers, $1.00.....2%
B. L. Caps (for Sturtevant Shells) $1.00.....2%
All other Primers, $1.20.....2%

Shells—
First quality, 4, 8, 10 and 12 gauge.....25&10&2%
First quality, 14, 16 and 20 gauge ($10 list).....30&10&2%
Star, Club, Rival and Climax brands, 33⅓&10&2%
Selbold's Comb. Shot Shells.....15&2%
I X L, 10 and 12 guage.....40&5&2%
"Special," 16 gauge.....30&10&5&2%
"Special," 10 and 12 gauge.....40&10&2%
Fowler's Pat.....$3.25
Brass Shot Shells, 1st quality.....60&2%
Brass Shot Shells, Club, Rival, Climax..65&2%

Shells Loaded—
Standard List.....40&10&10&5%

Wads—Price per M.

U.M.C.&W. R. A.—B. E., 11 up...	68¢	Dis. 20&3
U.M.C.&W. R. A.—B. E., 9&10...	82¢	
U.M.C.&W. R. A.—B. E., 8.....	96¢	
U.M.C.& W.R.A.—B. E., 7.....	$1.10	
U.M.C.&W. R. A.—P. E., 11 up..	1.15	
U.M.C.&W. R. A.—P. E., 9&10..	1.50	
U.M.C.&W. R. A.—P. E., 8.....	1.70	
U.M.C.&W.R.A.—P. E., 7.....	1.80	

Eley's B. E., 11 up.....$1.75
Eley's P. E., 11@20.....2.80

Anvils.—

Eagle Anvils, ₱ ₺ 10¢.....15@15&5%
Peter Wright's.....10½¢
Armitage's Mouse Hole.....9¢
Armitage's Mouse Hole, Extra.11½@11¾¢
Trenton.....9½@10¢
Wilkinson's.....9¾@10¢
J. & Riley Carr, Pat. Solid.....11@11½¢
Moore & Barnes Mfg. Co.....33⅓%

Anvil Vise and Drill—
Millers Falls Co., $18.00.....20%
Cheney Anvil and Vise.....25%
Allen Anvil and Vise, $3.00.....40&10%
Star.....45&5 %

Apple Parers—See Parers, Apple, &c.

Augers and Bits—

Douglass Mfg. Co.	70&70&10%
Wm. A. Ives & Co.	
Humphreysville Mfg. Co.	
French, Swift & Co. (F. H. Beecher, P. S. & W. Co.	
Rockford Bit Company.	

Cook's, Douglass Mfg. Co.....55 %
Cook's, N. H. Copper Co.50&10@50&10&5%
Ives' Circular Lip.....60%
Patent Solid Head.....30%
C. E. Jenning & Co., No. 10, extension lip.....40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ₱ set, 32½ quarters, No. 5, $5; No. 30, $3.50.20%
Lewis' Patent Single Twist.....45%
Russell Jennings' Augers and Bits.25&10%
Imitation Jennings' Bits.....60@60&5%
Snell's Jennings Pattern.....60%
Pugh's Black.....20%
Rockford, Jenning's Pattern.....60%
Car Bits.....50&10@60%
Car Bits, P. S. & W. Co.....60&10 %
Snell's Car Bits.....60%
L Hommodieu Car Bits.....15&10%
Forstner Pat. Auger Bits.....10%
Cincinnati Bell-Hangers' Bits.....30%

Bit Stock Drills—
Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30@30&5%
Williams' or Holt's, for metal.50&10&10%
Williams' or Holt's, for wood..40&10%
Cincinnati, for wood.....30&5%
Cincinnati, for metal.....40&10

Expansive Bits—
Clarks' small, $18; large, $26...35@35&5%
Ives' No. 4, ₱ doz $60.....40%
Swan's.....40%
Steer's, No. 1, $26; No. 2, $22.....35%
Stearns' No. 2, $48.....20%

Gimlet Bits—
Common.....₱ gross $2.75@$3.25
Diamond.....₱ doz $1.10.....25&10%
Bee.....25@25&5%
Double Cut Shepardson's.....45@45&10%
Double Cut, Ct. Valley Mfg. Co...30&10%
Double Cut, Hartwell's, ₱ gro.....$5.25
Double Cut, Douglass'.....40&10%
Double Cut, Ives'.....60@60&10%

Hollow Augers—
Ives.....
French, Swift & Co.....} 33⅓@
Douglass'.....} 33⅓&10%
Bonney's Adjustable, ₱ doz $48....40&10%
Stearns'.....20&10%
Ives' Expansive, each $4.50.....50&5%
Universal Expansive, each $4.50.....20%
Wood's.....25&25&10%
Cincinnati Adjustable.....30@30&5%
Cincinnati Standard.....25&10%

Ship Augers and Bits—
L'Hommedieu's.....15&10@15&10&5%
Watrous'.....15&10@15&10&10%
Snell's.....15&10@15&10&5%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10@5%

Awl Hafts—See Hafts, Awl.

Awls, Brad Sets, &c—

Awls, Sewing, Common ₱ gr $1.70, 35%
Awls, Should. Peg, ₱ gr $2.45, 40@40&10%
Awls, Pat. Peg...₱ gr 63¢.....40@40&10%
Awls, Shouldered Brad...2.70 ₱ gr.....35%
Awls, Handled Brad...$7.50 ₱ gr.....45%
Awls, Handled Scratch ₱ gr, $7.50.35&10%
Awls, Socket Scratch, ₱ doz, $1.50.25@30%

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

	Plain.	Beveled.
First quality	$8.00	$8.50
Others	7.50	8.00

Note.—Jobbers often sell at lower prices than the above.

Axle Grease—See Grease, Axle.

Axles—

No. 1,4¼¢@5¢, No. 2 5½¢@6¼¢} 3 % cash
Nos. 7 to 14.....55&5%
Nos. 15 to 18.....47½%
Nos. 19 to 22.....70%
National Tubular Self-Oiling: Standard Farm (1 to 5) and Special Farm (A1 to A5):
Less than 10 sets.....33⅓%
Over 10 sets.....33⅓&5%

Bag Holders.—See Holders, Bag.

Balances—

Spring Balances.....40%

No.	2000	20	30
Chatillon, ₱ doz	$0.80	0.95	1.75 net

Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Bars.

Crow—
Cast Steel.....₱ ₺ 4¼¢
Iron, Steel Points.....₱ ₺ 3¾¢

Basins, Wash—

Standard Fiberware, No. 1, 10½-inch, $2; 12-inch, $2.25; 13½-inch, $2.75; 15-inch, $3.25.

Beams, Scale—

Scale Beams, List Jan. 12, '82...50&10@50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%

Beaters, Egg, &c—

Keystone, P.D.&C., Each, No. 1, $1; No. 2, $2.....25 %
Dover.....₱ doz $1.50
National, ₱ doz $4.50.....33⅓%
Family (T. & S. Mfg. Co.), ₱ gro $17.00@$18.00
Duplex (Standard Co.).....₱ doz $1.25
Rival (Standard Co.).....₱ doz $1.00
Duplex Extra Heavy (Standard Co.)....₱ doz $3.50
Triumph (T. & S. Mfg. Co.), ₱ gro $10.50@$11.50
Advance, No. 1.....₱ gro $10.50
Advance, No. 2.....₱ gro $10.00
Bryant's.....₱ gro $14.00
Ayres' Spiral.....₱ gro $5.00
Double (H. & R. Mfg. Co).....₱ gro $16.20
Easy (H. & R. Mfg. Co.).....₱ gro $14.00
Triple (H. & R. Mfg. Co.).....₱ gro $16.20
Spiral (H. & R. Mfg. Co.).....₱ gro $4.50
Paine, Diehl & Co.'s.....₱ gro $24.00

Bells—

Cow—
Common Wrought.....60&10%
Western.....20&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Dodge, Genuine Kentucky....70@70&10%
Texas Star.....50&10@50&10&5%
Call.....40@40&5%
Farm Bells.....₱ ₺ 3¢@3¼¢
Steel Alloy Church and School Bells..40%

Door—
Gong, Abbe's.....33⅓&10%
Gong, Yankee.....45&10%
Gong, Barton's.....40&10@50%
Crank, Taylor's.....25&10%
Crank Brooks'.....50&10&2%
Crank Cone's.....10%
Crank, Connel's.....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned.....25&10%
Lever, R. E. M. Co.'s.....50&10&2%
Pull, Brook's.....50&10&2%
Pull, Western.....25&10%

Electric,
Wollensak's.....20%
Bigelow & Dowse.....20%
Taylor's.....20%

Hand—
Light Brass.....70 @ 75&10%
Extra Heavy.....65 @ 65&10%
White Metal.....60&10&10%
Silver Chime.....33⅓&10%
Globe (Cone's Patent).....25&10@35%

Bellows—

Blacksmiths'.....60&5@65%
Molders'.....40@40&10%
Hand Bellows.....40&10@50%

Belting, Rubber—

Common Standard.....70&10%
Standard.....70&70&5%
Extra.....60&5@60&10%
N. Y. B. & P. Co., Carbon....60@60&10%
N. Y. B. & P. Co., Diamond....50@50&5%

Bench Stops—See Stops, Bench.

Benders, Upsetters, Tire.

Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%

Bits—

Auger, Gimlet, Bit Stock, Drills, &c., see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—

Ordinary Tackle, list May 20, 1889...50@50&10%
Cleveland Block Co., Mal. Iron.....50%
Moore's Novelty, Mal. Iron.....50%

Bolts—

Carriage, Machine, &c.—
Com. list June 10, '84.....70&12½&2%
Genuine Eagle, list Oct., '84...75&10@80%
Phila. pattern, list Oct. 7, '84..80@80&10%
R.B.&W., old list.....70%
Machine, list Jan. 1, 1890.....75&10
Bolt Ends, list Jan. 1, 1890.....75&10

Door and Shutter—
Cast Iron Barrel, Square, &c..70@70&10%
Cast Iron Shutter Bolts.....70@70&10%
Cast Iron Chain (Sargent's list)....65&10%
Ives' Patent Door Bolts.....60%
Wrought Barrel.....70@70&10%
Wrought Square.....70@70&10%
Wr't Shutter, all Iron, Stanley's..60&10%
Wr't Shutter, Brass Knob, " ...40&10%
Wr't Shutter, Sargent's list.....60&10%
Wr't Sunk Flush, Sargent's list....55&10%
Wr't Sunk Flush, Stanley's list....50&10%
Wr't B.K.Flush, Com'n " ...55&10%

Stove and Plow—
Stove.....60%
Plow.....60&5%
R. B. & W., Plow.....55%

Tire—
Common, list Feb. 28, '83.....65%
Port Chester Bolt and Nut Company:
Empire, list Feb 28, '83.....65%
Keystone, Philadel., list Oct. '84....80%
Norway, Phila., list Oct. '84.....75%
American Screw Company:
Norway, Phil., list Oct. 16, '84.....75%
Eagle, Phil., list Oct. 16, '84.....80%
Philadel., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '83.....65%
R.B.&W., Philadel., list Oct. 16, '84....80%

Borers, Tap.

Common and Rind.....20&10%
Ive's Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....20&10&30%
Clark's.....33⅓@35%

Borax.....₱ ₺ 9½@10¼¢

Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Wagon.

Per ₺.....2¾¢

Braces.—

American Bit Brace Co.:
Nos. 10, 12, 20.....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37.....70&10&5%
Ball Braces, net.....$1.12 to $1.25¢
Amidon's
Barker's Imp'd Plain.....75&10 @80%
Barker's Imp. Nickeled....65&10@70%
Ratchet.....75&10@80%
Eclipse Rachet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10 ;10 in.....$2.25
Buffalo Ball.....$1.10@$1.15
P. S. & W. Co., Peck's Patent.....60%
Barber's,
Nos. 10 to 16.....50%
Nos. 30 to 33.....50%
Nos. 40 to 63.....50&10%
Barker's,
Nos. 8, 10 and 12.....75&10@80%
Plated, Nos. 8, 10 and 12....65&10@70%
Bartholomew's,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....$1.00@$1.10
Fray's Genuine Spofford's..50&5@50&10%
Fray's No. 7 to 120, 81 to 123, 207 to 414.....50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barbers.....60&5%
Spofford.....60&5@60&10%
Osgood's Ratchet.....40&10@50%

Brackets—

Shelf plain, Sargent's list, 55&10@55&10&10%
Shelf, fancy, Sargent s list, 60&10@60&10&10%
Reading, plain.....50&10@60&10&5%
Reading, Rosette.....60&10@60&10&10%

Bright Wire Goods—See Wire.

Broilers—

Henis' Self-Basting. { Inch.... 9 10 9x11
{ Per doz..$4.50 5. 6.50

Buckets, Well.

Galvanized—
Hill's.....₱ doz, 12 qt, $4.25; 14 qt, $5.25
Iron Clad.....₱ doz, 14 qt, $4.25@$4.50
Whiting's Flat Iron Band.....$4.25@4.50
Whiting's Wired Top..₱ doz $4.00@.4.25

Bull Rings—See Rings, Bull.

Butcher's Cleavers—See Cleavers, Butchers'.

Butts—

Brass—
Wrought Brass.....75@75&10%
Cast Brass, Tiebout's'.....50%
Cast Brass, Corbin's, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%

Cast Iron—
Fast Joint, Narrow.....50&10&5@60%
Fast Joint, Broad.....50&10@60%
Loose Joint.....
Loose Joint, Japanned.....
Loose Joint, Jap. with Acorns..
Parliament Butts.....
Mayer's Hinges.....} .70&5@ 70&10%
Loose Pin, Acorns.....
Loose Pin, Acorns, Japanned...
Loose Pin, Acorns, Japanned, Plated Tips.....

Wrought Steel—
Fast Joint, Narrow.....
Fast Joint, Lt. Narrow.....
Fast Joint, Broad.....
Loose Joint, Broad.....} .70&5@
Table Butts, Back Flaps, &c.....} 70&10%
Inside Blind, Regular.....
Inside Blind, Light.....
Loose Pin.....
Bronzed Wrought Butts.....50%

Calipers—See Compasses.

Calks, Toe—

Gautier.....₱ ₺ 5½@6¢
Dewicks (Burke).....₱ ₺ 5½@6¢

Can Openers—See Openers, Can.

Cards—

Horse & Curry.....10&10&10&10%
Cotton.....10&10&10%
Wool.....10&10&10%

Carpet Stretchers—See Stretchers Carpet.

Carpet Sweepers—See Sweepers Carpet.

Cartridges—See Ammunition.

Casters—

Bed.....
Plate.....} Brass....55@55&10%
Shallow Socket....} Others...60@60&10%
Deep Socket.....40&10%
Yale Casters, list May, 1884...30&10@40%
Yale, Gem.....60@60&5%
Martin's Patent (Phœnix).....45&10@50%
Payson's Anti-friction.....60@60&10%
Giant Truck Casters.....30%
Stationary Truck Casters.....50&10%
Socket Truck Casters.....50%

Cattle Leaders—See Leaders, Cattle.

Chain—

Trace, Wagon and Fancy Chains, List revised April 21, 1890.....50& 10@60%
American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$3.00	3.70	4.80	4.20	3.90	3.75	3.65	3.55

Less than cask lots, add ¼¢@½¢ ₱ ₺.
German Coil, list of June 20, 1887.....50&10&5@60%
German Halter Chain, list of June 20, 1887.....50&10&5@60%
Covert Halter.....60&2%
Covert Traces.....35@2%
Oneida Halter Chain.....60@60&5%
Galvanized Pump Chain.....₱ ₺ 5½¢@6¢
Jack Chain, Iron.....75&10@80%
Jack Chain, Brass.....75@75&10%

Chalk—

White.....₱ gr 50¢
Red.....₱ gr 70¢
Blue.....₱ gr 85¢
See also Crayons.

Chalk Lines—See Lines.

Chisels—

Socket Framing and Firmer.
P. S. & W.....
New Haven.....
Witherby.....
Mix.....} ..75 @ 75&10
Ohio Tool Co.....
Douglass.....75@75&5%
Buck Bros.....30%
Merrill.....60&10@60&10&5%
L. & I. J. White.....30@30&5%

Tanged and Miscellaneous.
Tanged Firmers.....40&10@50%
Butchers'.....$4.75@$5.00
Spear & Jackson's.....$5 to $
Buck Bros.....30%
Cold Chisels, ₱ ₺.....15@10%

Chucks–

Beach Pat.....each, $8.00.....20%
Morse's Adjustable,each, $7.00, 20@20&5%
Danbury.....each, $6.00, 30@30&5%
Syracuse, Balz Pat.....25%
Skinner's Pat. Drill Chucks.....30%
Skinner's Independent Lathe Chucks.40%
Skinner's Pat. Comb. Chuck.....40%
Union Mfg. Co.,
Victor.....$8.50, 25%
Combination.....40%
Universal.....40%
Independent.....40%

Clamps–

R. I. Tool Co.'s Wrought Iron.....25%
Adjustable, Cincinnati.....15&10%
Adjustable, Hammers.....15%
Adjustable, Stearn's.....30&30&10%
Stearn's Adjustable Cabinet and Corner .....30&30&10%
Cabinet, Sargent's.....60%&10%
Carriage Makers', Sargent's.....70&10%
Carriage Makers', P., S. & W. Co..40&10%
Eberhard Mfg. Co.....40&5&40&10%
Warner's.....40&10&40&10&5%
Saw Clamps, see Vises, Saw Filers'.
Carpenters', Cincinnati.....15%

Cleavers.

Butchers'.
Bradley's.....25@30%
L. & I. J. White.....20&5%
Beatty's.....40@40&5%
New Haven Edge Tool Co.'s.....40%
P., S. & W.....33⅓&5@33⅓&10%
Foster Bros.....30%
Schuite, Lohoff & Co.....40@40&5%

Clips–

Norway, Axle, ¼ & 5-16.....55&5&5%
2nd grade Norway Axle, ¼ & 5-16 65&5%
Superior Axle Clips.....60%&5&70%
Norway Spring Bar Clips, 5-16..60&5&5%
Wrought-Iron Felloe Clips.....₩ lb, 5½¢
Steel Felloe Clips.....₩ lb, 5¢
Baker Axle Clips.....17¢

Cloth and Netting, Wire—See Wire, &c.

Cockeyes.....50%

Cocks, Brass.

Hardware list.....50&2%

Coffee Mills—See Mills, Coffee.

Collars, Dog, &c.

Medford Fancy Goods Co.....40&10%
Embossed, Gilt, Pope & Steven's list 30&10%
Leather, Pope & Steven's list.....40%
Brass, Pope & Steven's list.....40%
Chapman Mfg. Company.....50&10@60%

Combs, Curry.

Fitch's.....50&10@50&10&10%
Rubber, per doz $10.00.....20%
Perfect.....50%

Compasses, Dividers, &c.–

Compasses, Calipers, Dividers.70@70&10%
Bemis & Call Co.'s
Dividers.....60&5%
Compasses & Calipers.....50&5%
Wing and Inside or Outside.....50&5%
Double.....60%
(Call's Pat. Inside).....30%
Excelsior.....50%
J. Stevens & Co.'s.....25&10%
Starrett's
Spring Calipers and Dividers 25&10&10%
Lock Calipers and Dividers.....25&10%
Combination Dividers.....25&10%

Coopers' Tools—See Tools, Coopers'.

Cord, Sash–

Common.....₩ lb 10@11¢
Patent, good quality.....₩ lb 13@13½¢
White Cotton Braided, fair...₩ lb 28@29¢
Common Russia Sash.....₩ lb 13½¢
Patent " " .....₩ lb 15¢
Cable Laid Italian Sash.....₩ lb 22@23¢
Indian Cable Laid " .....₩ lb 13¢
Silver Lake–
A Quality, White, 50¢.....10&10&5%
A Quality, Drab, 55¢.....10&10&5%
B Quality, White, 50¢.....28@30%
B Quality, Drab, 55¢.....31@33%
C Quality, White (only).....26½@28¢
Sylvan Spring, Extra Braided, White, 34¢
Sylvan Spring, Extra Braided, Drab..30¢
Semper Idem, Braided, White.....30¢
Egyptian, India Hemp, Braided.....25¢
Samson–
Braided, White Cotton, 50¢...30@30&5%
Braided, Drab Cotton, 55¢....30@30&5%
Braided, Italian Hemp, 55¢...30@30&5%
Braided, Linen, 80¢.....30@30&5%

Corkscrews—See Screws, Cork.

Corn Knives and Cutters—See Knives, Corn.

Crackers, Nut–

Table (H. & R. Mfg. Co.)..... 40%
Blake's Pattern..... ₩ doz $2.00, 10%
Turner & Seymour Mfg. Co.... ..... 50%

Cradles–

Grain.....50&5&2@50&10&2%

Crayons.

White Crayons, ₩ gr, 12¢@12½¢.....10%
D. M. Stewart Mfg. Co., Metal Workers, ₩ gr, $2.50.....25%
M. Stewart Mfg. Co., Rolling Mill, ₩ gr, $2.50.....25%
See also Chalk.

Crow Bars—See Bars, Crow.

Curry Combs—See Combs, Curry.

Curtain Pins—See Pins Curtain.

Cutters–

Meat.
Dixon's ₩ doz.....40&5%
Nos..... 1 2 3 4
$14.00 $17.00 $19.00 $20.00
Woodruff's ₩ doz.....40&5%
Nos..... 100 150
$15.00 $18.00
Hales Pattern ₩ doz.....70@70&5%
Nos.....11 12 13
$27.00 $33.00 $45.00
American.....30%
Nos..... 1 2 3 4 B 5
Each.....$5 $7 $10 $25 $50 $60
Enterprise.....30%
Nos..... 10 12 22 32 42
Each.....$3 $2.50 $4 $6 $15
Pennsylvania.....40&10%
Nos..... 1 2 3 00
₩ doz....$24.00 $28.00 $36.00 $28.00
Miles' Challenge ₩ doz.....45@45&10%
Nos..... 1 2 3
$22.00 $30.00 $40.00
Home No. 1.....₩ doz, $26.00, 55&10%
Draw Cut, each:
Nos..5 2 6 8
$50 $75 $80 $225 .....20@25%
Beef Shavers (Enterprise).....20&10@30%
Little Giant.....50%
Chadborn's Smoked Beef Cutter, ₩ doz $60.00

Tobacco.
Champion.....20&10@30%
Wood Bottom.....₩ doz $5.00@$5.25
All Iron.....₩ doz $4.25
Nashua Lock Co.'s..₩ doz, $18.00 50@55%
Wilson's.....55%
Sargents's .....₩ doz, $24, 55&10%
Acme .....₩ doz $20.00, 40%

Washer.
Smith's Pat.....₩ doz $12.00, 20&10&10%
Johnson's.....₩ doz $11.00, 33⅓%
Penny's ₩ doz Pol. $14; Jap'd, $16.00, 55%
Appleton's.....₩ doz $16.00, 60&10%
Bonney's.....30&10%
Cincinnati.....25&10%

Cutlery–

Beaver Falls & Booth's.....33⅓%
Wostenholme.....$7.75 to £

Dampers, &c–

Dampers, Buffalo.....40&10%
Buffalo Damper Clips.....40&10%
Crown Damper.....40%
Excelsior.....40&10%

Diggers, Post Hole, &c –

Samson Post Hole Digger, ₩ doz $36.00, 25&10%
Fletcher Post Hole Augers, ₩ doz $36, 20%
Eureka Diggers.....₩ doz $16.00@17.00
Leed's .....₩ doz $8.00@9.00
Vaughan's Post Hole Auger, ₩ doz $13.00@14.00
Kohler's Little Giant.....₩ doz. $18.00
Kohler's Hercules.....₩ doz. 15.00
Kohler' New Champion.....₩ doz. $9.00
Schniedler.....₩ doz. $18.00
Ryan's Post Hole Diggers..₩ doz $24.00
Cronk's Post Bars, ₩ doz $80.00, 50&5@50&10%
Gibbs Post Hole Digger, ₩ doz $30.00, 50¢
Imperial, ₩ doz $15.....45%

Dividers–

See Compasses.

Dog Collars—See Collars, Dog, &c.

Door Springs—See Springs, Door.

Drawers.

Money, ₩ doz.....$18&$20

Drawing Knives—See Knives, Drawing.

Drills and Drill Stocks–

Blacksmiths'.....each $1.75
Blacksmiths' Self-Feeding, each $7.50,20%
Breast, P. S. & W.....40&10%
Breast, Wilson's.....30&5%
Breast, Millers Falls.....each $3.00, 25%
Breast, Bartholomew's....each $2.50, 25&10&40%
Ratchet, Merrill's.....20@20&5%
Ratchet, Ingersoll's.....25%
Ratchet, Parker's.....20@20&5
Ratchet, Whitney's.....20&10%
Retchet, Weston's.....20@25%
Ratchet, Moore's Triple Action...25@30%
Ratchet, Curtis & Curtis.....30%
Whitney's Hand Drill, Plain, $11.00; Adjustable, $12.00.....20&10%
Wilson's Drill Stocks.....10%
Automatic Boring Tools....$1.75@$1.85

Twist Drills–
Morse.....50&10&5%
Standard .....50&1 &5%
Syracuse (Metal list).....50&10%
Cleveland.....50&10&5%
Williams .....50&10&10%
New Process.....50&10&5%

Drill Bits.—See Augers and Bits.

Drill Chucks.—See Chucks.

Dripping Pans-See Pans, Dripping.

Drivers, Screw.

Douglas Mfg. Co.....20@10&10%
Disston's.....4t&10%
Disston's Pat. Excelsior.....45&10%
Buck Bros.....30%
Stanley R. & L. Co.'s
Varnished Handles.....65&10%
Black Handles.....60&10%
Sargent & Co.'s
No. 1 Forged Blade.....60&10&10%
Nos. 20, 30 and 60. .....66⅔&10& 0%
P. S. & W. ..... 70 %
Knapp & Cowles No.1.....60&10&70%
No. 1 Extra.....60@60&10
Nos. 00 & 4.....50&5@50&10&5%
Stearns'.....25&10&5%
Gay & Parsons.....35%
Champion.....25&10%
Clark's Pat.....30@33⅓%
Crawford's Adjustable.....30%
Eilrich's Socket and Ratchet..25@25& 0%
Allard's Spiral, new list.....25%
Kolb's Common Sense ₩ doz $6.00,25&10%
Syracuse Screw-Driver Bits....30&30&5%
Screw-Driver Bits .....₩ doz. 50@75¢
Screw-Driver Bits, Parr's.....₩ gro $6.25
Fray's Hol. Hdle. Sets. No. 3. $14.00, 25@25&10%
P. D. & Co.'s all Steel.....50%
Cincinnati .....20&10%
Brace Screw Drivers.....25&10%
Buck Bros.' Screw-Driver Bits .... %

Egg Beaters.—See Beaters, Egg.

Egg Poachers.—See Poachers, Egg.

Electric Bell Sets.—See Bells, Electric.

Emery. — No. 4 to No. 54 to Flour, CF

	46 gr.	150 gr.	F. FF.
Kegs, ₩ lb	4½¢	5 ¢	2½¢
½ kegs, ₩ lb	4¾¢	5¼¢	2¾¢
¼ kegs, ₩ lb	5 ¢	5½¢	3 ¢
10-lb cans, 10 in case	6 ¢	6½¢	5 ¢
10-lb cans, less than 10	10 ¢	10 ¢	7½¢

Enameled and Tinned Ware—See Ware, Hollow.

Escutcheon Pins—See Pins, Escutcheon.

Escutcheons.

Door Lock....Same dis as Door Locks.
Brass Thread.....60@60&10%
Wood.....25%

Fasteners, Blind–

Mackrell's, ₩ doz. $1.00.....20@20&10%
Van Sand's Screw Pat., $15 ₩ gr..60&10%
Van Sand's Old Pat., $15.00 ₩ gr..55&10%
Washburn's Old Pattern, ₩ gr.....$9.00
Merriman's.....new list
Austin & Eddy No. 2008 ₩ gr.....$9.00
Security Gravity, ₩ gr.....$9.00

Faucets.–

Fenn's.....40%
Bohren's Pat. Rubber Ball.....25%
Fenn's Cork Stops.....33⅓%
Star.....60%
Frary's Pat. Petroleum.....40&5&2%
B. & L. B. Co.
West's Lock, Open and Shut Key...50%
Star, Metal Plug, new list.....40%
Lockport, Metal Plug, reduced list..60%
Metallic Key, Leather Lined....60&10@60&10&10%
Cork Lined.....70&5@70&10%
Burnside's Red Cedar.....50%
Burnside's Red Cedar, bbl lots....50&10%
John Sommers'
Peerless Best Block Tin Key.....40%
IXL, 1st quality, Cork Lined.....50%
Diamond Lock.....40%
Perfection, Fla. Red Cedar.....50%
Goodenough Cedar.....50%
Boss Metallic Key.....50%
Reliable Cork Lined.....60%
Western Pattern Cork Lined.....50%
Self-Measuring
Enterprise, ₩ doz $50.00.....20&10%
Lane's, ₩ doz $36.00.....25&10%
Victor, ₩ doz $36.00.....25&10%

Felloe Plates—See Plates, Felloe.

Fifth Wheels.–

Derby and Cincinnati.....50&5%
Brewster. .....55&5%

Files–

Domestic–
Nicholson Files, Rasps, &c.....60&10@60&10&5%
Nicholson (X. F.) Files.....25%
Nicholson's Royal Files (Seconds).....75% (extra prices on certain sizes)
Other makers, best brands.....60&20%
Fair brands .....60&10&10@70&5%
Second quality .....70&10@75&10%
Nicholson's Horse Rasps....60&10@60& 10&5%
Heller's Horse Rasps.....50&7½@50&10%
McCaffrey's Horse Rasps. .....50&10%
Chelsea Horse Rasps, Hand Cut...50&10%

Imported–
Moss & Gamble....List, April 1, 1883, 15%
Butcher.....Butcher's list, 20%
Stubs.....Stubs list, 25@30%
Turton's.....Turton's list, 20@25%
Greaves' Horse Rasps..American list, 60%

Fixtures.

Grindstone–
Sargent's Patent.....70&10%
Reading Hardware Co.....30&10%
P., S. & W. Co.....50&10%

Fluting Machines—See Machines, Fluting.

Fluting Scissors—See Scissors, Fluting.

Fodder Squeezers—See Squeezers, Fodder.

Forks–

Hay, Manure, &c., Asso List.....70%
Hay, Manure, &c., Phila. List 60@60&5%
Plated, see Spoons.

Frames–

Saw–
White Vermont.....₩ gro $9.00@10.00
Red, Polished and Varnished.....₩ doz $1.50, 25%

Screen, Window and Door–
Porter's Pat. Window and Door Frame. 33⅓&10%
Warner's Screen Corner Irons..33⅓&5 33⅓&10%
Stearns' Frames and Corners..25@25&10%

Freezers, Ice Cream–

Buffalo Champion..... 65&65&5%
Shepard's Lightning.....65@65&5%
White Mountain..... 60@60&5%
Granite State.....65@65&5%
Arctic .....70@70&5%
American..... 60%
Gem..... 65
Blizzard.....70%
Double Action Crown..... .....60%
Crown.....60%
Star 60
Peerless and Giant.....60&10
Zero and Pet.....65&10
Boss.....65&10&10
Keystone, P. D. & Co., each, $1.50.....25%

Fruit and Jelly Presses—See Presses, Fruit and Jelly.

Fry Pans—See Pans, Fry.

Funnels.

Gersdorff's Perfection, Standard and Globe; Tin, 1 gro., 10%; 2 to 5 gro., 20%; 5 to 10 gro..... .....30%
Copper, 1 to 6 doz., 15%; 6 to 12 doz., 20%; over 12 doz.....30%

Fuse– ₩ 1000 ft

Common Hemp Fuse, for dry ground.$2.70
Common Cotton Fuse, for dry ground 2.85
Single Taped Fuse, for wet ground.. 3.85
Double Taped Fuse, for very wet gr. 4.85
Triple Taped Fuse, for very wet gr.. 5.60
Small Gutta Percha Fuse, for water. 7.50
Large Gutta Percha Fuse, for water.12.00

Gates, Molasses–

Stebbin's Pattern.....75@75&10%
Stebbin's Genuine.....60&10&10%
stebbin's Tinned Ends.....40&10%
Chase's Hard Metal.....50&10%
Bush's.....20%
Lincoln's Pattern.....70@70&10%
Weed's.....20&10%
Boss, ₩ doz:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10.....60&10&10%

Gauges

Marking, Mortise, &c.....60&10%
Starrett's Surface, Center and Scratch. 25&10%
Wire, low list.....10&10%
Wire, Wheeler, Madden & Co 10%
Wire, Morse's.....50@50&5%
Wire, Brown & Sharpe's.....10@20%
Wire, P. S. & W. Co.....

Gimlets–

Nail and Spike.....50&10&5%
"Eureka" Gimlets.....40&10%
"Diamond" Gimlets..... ₩ gr $5.00
Double Cut, Shepardson's.....45@45&5%
Double Cut, Ives'.....60@60&5%
Double Cut, Douglass'.....40&10%
"Bee," ₩ gr $12.....25@25&5%

Glue–

Le Page's Liquid.....25@25&5%
Upton's Liquid 35%
Le Page & Co.'s Improved Process 25@25&5%

Glue Pots—See Pots, Glue.

Grease, Axle.

Fraser's .....Keg ₩ lb 4¢, Pail ₩ lb 5¢
Fraser's, in boxes.....₩ gr $9.50
Dixon's Everlasting, in bxs...₩ doz 1 lb $1.20; 2 lb $2.00
Dixon's Everlasting....10-lb pails, ea. 35¢
Lower grades, special brands, ₩ gr $5.50@$7.00

Grindstones–

Small, at factory.... ..₩ ton $7.50@9.00

Grindstone Fixtures—See Fixtures, Grindstone.

Hack Saws—See Saws.

Hafts, Awl.

Sewing, Brass Fer.₩ gr, $3.50.....45&10%
Pat. Sewing, Short.$1.00 ₩ doz.....40&10%
Pat. Sewing, Long.....₩ doz $1.20
Pat. Peg, Plain Top.₩ gr $10.00...45&10%
Pat. Peg, Leather Top.₩ gr $12.00.45&10%

Halters.

Covert's, Rope, ½-in. Jute..... 50&2%
Covert's, Rope, ½-in. Hemp .....50&2%
Covert's Adj. Rope Halters .....40&2%
Covert's Hemp Horse and Cattle Tie, 50&2%
Covert's Jute Horse and Cattle Ties, 60&10&2%

Hammers–

Handled Hammers–
Maydole's, list Dec. 1, '85.. ....25&10@35%
Buffalo Hammer Co.... } List Jan. 15, '87
Humason & Beckley ... } 50@50&10%
Atha Tool Co..... }
Fayette R. Plumb.....50@50&10%
C. Hammond & Son..List, Oct., 1889, 50@50&10%
Hartford Hammer Co.....50@50&10%
Verree.....5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles.....20@25
Peck, Stow & Wilcox 40%
Sargent's.....33⅓&10%

Heavy Hammers and Sledges–
3 lb and under.. .... ₩ lb 40¢ } 70@70&10%
3 to 5 lb.....₩ lb 36¢ }
Over 5 lb.....₩ lb 30¢ }
Wilkinson's Smiths.....10½¢@11¢₩ lb

Handcuffs and Leg Irons—See Police Goods,

Handles–

Cross-Cut Saw Handles–
Atkins' No. 1 Loop, ₩ pair, 28¢; No. 3 18¢; No. 6, 16¢; No. 2 and No. 4 Reversible, 18¢.
Boynton's Loop Saw Handles, 50¢....60%
Champion..... 15

Iron, Wrought or Cast–
Door or Thumb.

Nos.....	0	1	2	3
Per doz....	$0.90	1.00	1.18	1.35 1.50

60&10&10%

Roggin's Latches.....₱ doz 30¢@35¢
Bronze Iron Drop Latches..₱ doz 70¢ net
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no Plate, $0.88 ..... net
Barn Door, ₱ doz $1.40..... 10&10%
Chest and Lifting..... 70%

Wood—

Saw and Plane.....40&10@40&10&5%
Hammer, Hatchet, Axe, Sledge, &c...40%
Brad Awl.....₱ gr $2.00
Hickory Firmer Chisel, ass'd.₱ gr 4.50
Hickory Firmer Chisel, large.₱ gr 5.00
Apple Firmer Chisel, ass'd...₱ gr 5.00
Apple Firmer Chisel, large...₱ gr 6.00
Socket Firmer Chisel, ass'd..₱ gr 3.00
Socket Framing Chisel, ass'd.₱ gr 5.00
} dis 40%
J. S. Smith & Co.'s Pat File.....50-
File, assorted.....₱ gr 2 75
Auger, assorted.....₱ gr 5.00
Auger, large.....₱ gr 7.00
} 40@40&10-
Pat. Auger, Ives'.....30&10-
Pat. Auger, Douglass.....₱ set $1.20
Pat. Auger, Swan's.....₱ set $1.00
Hoe, Rake, Shovel, &c.....5%@10%

Hangers—

Barn Door, old patterns...60&10&10@70%
Barn Door, New England...60&10&10&70
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Wood Track.....55%
U. S. Wood Track.....65%
Champion.....60&10%
Rider and Wooster, Medina Mfg. Co.'s list.....70%
Climax Anti-Friction.....60%
Climax Anti-Friction for Wood Track55%
Zenith for Wood Track.....55%
Reed's Steel Arm.....50%
Challenge, Barn Door.....50%
Sterling's Imp'ved (Anti-Friction).65&10%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Cherltree.....50&10%
Kidder's.....50&10&60%
The Boss.....60&10%
Best Anti-Friction.....60&10%
Duplex (Wood Track).....60&10&5%
Terry's Pat., ₱ doz pr. 4 in, $10.00; 5 in. $12.00.....50&10%
Terry's Steel Anti-Friction Leader 50&10%
Terry's Steel Anti-Friction Ideal..50&10%
Cronk's Patent, Steel Covered.....50@5%
Wood Track Iron Clad, ₱ ft. 10¢.....50 &15@60¢
Carrier Steel Anti-Friction.....50@50&5%
Architect, ₱ set $6.00.....20¢
Eclipse.....20&10%
Felix, ₱ set $1.50.....20¢
Richards'.....30@30&10%
Lane's Standard.....50&5@50&10%
Lane's New Standard.....50@5 &5%
Ball Bearing Door Hanger..20&10@25&10%
Warner's Pat.....20&10@20&10&10%
Stearns' Anti-Friction.20&10@20&10&10%
Stearns' Challenge.....25&10@25&10&10%
Faultless.....40@40&5%
American, ₱ set $6.00.....20&10%
Rider & Wooster, No. 1, 62½¢; No. 2, 75¢.....40%
Paragon, Nos. 1, 2 and 3.....40&10%
Cincinnati.....25&10%
Paragon, Nos. 5, 5¼, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel Cast Iron.....50%
Nickel, Malleable Iron and Steel 40%
Scranton Anti-Friction Single Strap33⅓%
Wild West, 4 in. Wheel, $15.00; 5 in. Wheel, $21.00.....45%
Star.....40&10@40&10&5%
May.....50&5@50&10%
Barry, $6.00.....40&10%

Harness Snaps—See Snaps.

Hatchets—

American Axe and Tool Co.
Bloop's.
Hunt's
Hurd's
Mann's
Peck's
Underhill's.
Buffalo Hammer Co.
Fayette R. Plumb.
C. Hammond & Son.
Kelly's.
Sargent & Co.
P., S. & W. Co.
Ten Eyck Edge Tool Co.
Collins.
} 40 & 10 @ 50&5 %
Schulte, Lohoff & Co. .....50@50&5%

Hay and Straw Knives—See Knives.

Hinges—

Blind Hinges—

Parker.....75&2%
Palmer.....50&5&10%
Seymour.....70&2%
Nicholson.....45&10%
Huffer.....50%
Clark's, Nos. 1, 3, 5, 40 and 50 ..... 75&10&5@80%
Clark's Mortise Gravity.....50%
Sargent's, Nos. 1, 3, 5, 11, 13 ..... 75&10@55&10&5%
Sargent's, No. 12.....77&10&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's
Noiseless.....75&10%
Niagara.....80%
Buffalo.....80%
Clark's Genuine Pattern.....80%
O. S., Lull & Porter.....75&10%
Acme, Lull & Porter.....75%
Queen City Reversible....70&10&5@75%
Clark's Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3.....75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $10.50; No. 3, for Brick, $13.50. .....25&2%

Gate Hinges—

Western.....₱ doz $4.40, 60%
N. E.....₱ doz $7.00, 55%
N. E. Reversible.....₱ doz $5.20, 55&10%
Clark's, Nos. 1, 2, 3.....60&10&5%
N. Y. State.....₱ doz $5.00, 55&10%
Automatic.....₱ doz $12.50, 50%
Common Sense.....₱ doz pair $4.50, 50%
Seymour's.....45&10%
Shepard's.....60&10&5%
Reed's Latch and Hinges. ₱ doz $12.00, 50%

Spring Hinges—

Geer's Spring and Blank Butts.....40%
Union Spring Hinge Co.'s list, March, 886 ..... 20%
Acme.....30%
J. S.....25&10%
Empire and Crown.....20%
Hero and Monarch.....55%
American, Gem, and Star..... 20%
Oxford.....20%
Barker's Double Acting.....20&10%
Union Mfg. Co.....25%
Dommer's.....30%
Buckman's.....15@20%
Chicago.....30%
Wiles'.....10%
Devore's.....40%
Rex.....40%
Royal.....60%
Reliable.....60%
Champion.....60%
Bardsley's Patent.....40%
Stearn's.....50&10%

Wrought Iron Hinges

Strap and T.....70&10%
Screw Hook and Strap. { 6 to 12 in., ₱ ℔ .4 2-10¢ / 14 to 20 in., ₱ ℔ .3 7-10¢ / 22 to 36 in., ₱ ℔ .3 2-10¢
Heavy Welded Hook. { 6 to 12 in., ₱ ℔ .4 2-10¢ / 14 to 20 in., ₱ ℔ .3 7-10¢ / 22 to 36 in., ₱ ℔ .3 2-10¢
Screw Hook and Eye. { ⅛ in., ₱ doz $1.50 / ⅝ in., ₱ doz $2.45 / ¾ in., ₱ doz $3.80 } 10%
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 232 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10%
Plate Hinges "Providence" { 8, 10 & 12 in., ₱ ℔ .....5¢ / over 12 in., ₱ ℔. ...4¢

Hoes—

Eye—

D. & H. Scovil.....20%
Lane's Crescent Planters Pattern..45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co., S. & O. Pat. 60&5@60&10%
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub.....60@60&10%

Handled—

Garden, Mortar, &c.....70%
Planter's, Cotton, &c.....70%
Warren Hoe.....60%
Magic.....₱ doz $4.00

Hog Rings and Ringers—See Rings and Ringers.

Hoisting Apparatus—See Machines, Hoisting.

Hollow-Ware—See Ware, Hollow.

Holders.

Bag.

Sprengie's Pat.....₱ doz $18.....60%

Bit.

Extension, Barber's, ₱ doz $15.00.....40@40&10%
Ives, ₱ doz $20.00.....60&5@60&10%
Diagonal.....₱ doz $24.00, 40%
Angular.....₱ doz $24.00, 40&5%

File and Tool—

Balz Pat.....₱ doz $4.00; 25%
Nicholson File Holders..... 20%

Hooks—

Cast Iron—

Bird Cage, Sargent's list.....
Bird Cage, Reading.....
Clothes Line, Sargent's list..
} 60&10&10%
Clothes Line, Reading list. 60&10@60&10&10%
Ceiling, Sargent's list.....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading.50&10@50&10&10%

Wrought Iron—

Cotton.....₱ doz $1.25
Cotton Pat. (N.Y. Mallet & Handle W'ks). 30%
Tassel and Picture (T. & S. Mfg. Co.)..50%
Wrought Staples, Hooks, &c. See Wrought Goods.

Wire—

Wire Coat and Hat, Gem, list April, 1886.....50%
Wire Coat and Hat, Miles', list April, 1886.....50%
Indestructible Coat and Hat.....45%
Wire Coat and Hat, Standard.....45%
Handy Hat and Coat.....50&10%
Steady Ceiling Hooks.....50&10%
Belt. .....80@80&10%
Atlas, Coat and Hat.....60%

Miscellaneous.

Grass, No. 2, $2.00; No. 3, $2.25; No. 4, $2.50
Nolin's Grass.....₱ doz $2.25
Bush.....55@60%
Whiffletree—Patent.....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American..... 50%
Bench Hooks .....See Bench Stops.

Horse Nails—See Nails, Horse.

Horse Shoes—See Shoes, Horse.

Hose, Rubber—

Competition..... ...75&10@75&10&5%
Standard.....70@70&10%
Extra.....60@60&10%
N. Y. B. & P. Co., Para.....50&10%
N. Y. B. & P. Co., Extra..... 50%
N. Y. B. & P. Co., Dundee.....60&10&5%

Huskers—

Blair's Adjustable..... ....₱ gr $8.00
Blair's Adjustable Clipper... ..₱ gr 7.00
Hubbard's Solid Steel.....₱ gr 4.50

Indurated Fiber-Ware—See Ware, Indurated Fiber.—

Irons.

Sad—

From 4 to 10, at factory....₱ 100 ℔, $2.30@$2.40
Self-Heating.....₱ doz $9.00 net
Self-Heating, Tailors'....₱ doz $18.00 net
Mrs. Pott's Irons..... .....40@40&10%
Enterprise Star Irons..... ...40@40&10%
Cold Handle Sad Irons .....40&10@50%
Ideal Irons new list.50&10@50 & 10&10%
Salamander, Irons..... .....25%
R. B. Sad Irons, ₱ ℔..... .....3 @3½¢
Combined Fluter and Sad Iron, ₱ doz, $15.00..... .....15%
Fox Reversible, Self-Fluter ₱ doz $24.00
Chinese Laundry (N.E. Butt Co.) 8½¢, 15%
New England.....5¢, 15%
Mahony's Troy Pol. Irons..... .....25%
Sensible..... .....20@20&5%
National Self-Heating..... .....30%

Soldering—

Soldering Coppers..... ₱ ℔ 22 @ 23¢
Covert's Adjustable, list Jan. 1, 1886. 35&2%

Irons, Pinking, per doz., 65¢.

Jack Screws—See Screws.

Jacks, Wagon.

Daisy..... .....25%

Kettles— Spun. Stamped.
Brass, 7 to 17 in., ₱ ℔.... 24¢ 21 ¢
Brass larger than 17 in., ₱ ℔..... 26¢ 23½¢
Enameled and Tea—See Hollow-Ware.

Keys—

Lock Asso'n list Dec. 30, 1886...50&10@ 60&5%
Eagle, Cabinet, &c .....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss, Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Ratchet Bed Keys.....₱ doz $4.00, 15%
Wollensak Tinned.....50&10%

Knife Sharpeners—See Sharpeners, Knife.

Knives.

Butcher, Shoe, &c—

Wilson's Butcher Knives.....25@30%
Ames' Butcher Knives 25%
Foster Bros.' Butcher, &c..... .....40%
Nichols' Butcher Knives.....40&10%
Ames' Shoe Knives.....20@25%
Ames' Bread Knives, ₱ doz $1.50, 15@20%
Moran's Shoe and Bread.....20%
Hay and Straw.....See Hay Knives.
Table and Pocket.....See Cutlery.
Corn, Auburn Mfg. Co. Western Pat., $2.00
Corn, Auburn Mfg. Co. Crescent.....$3.50

Corn—

Bradley's..... .....10%
Wadsworth's..... .....25%

Drawing—

Witherby.....
P. S. & W .....
Mix .....
New Haven.....
Merrill .....60&10@60&10&5%
Douglas.....75@75&5%
Watrous.....15&10@25%
L. & I. J. White.....20&5%
Bradley's.....35%
Adjustable Handle.....25@33⅓%
Wilkinson's Folding..... 25@25&5%
} .75 @ 75&10 %

Hay and Straw—

Lightning, Mfrs'. price ₱ doz $18.00, 25% But jobbers cut this price freely, often selling at $8 @ $8.50.
Wadsworth's.....40&7½@40&10%
Carter's Needle.....₱ doz $11.00@$11.50
Heath's.....₱ doz $13.00@13.50
Auburn Hay, Com. and Spear Point..50%
Auburn, Straw.....40%
Nolin's Hay ..... ₱ doz.$8.00 @ $9.00

Mincing.

Am. (2d quality), ₱ gr., 1 blade blades, $12; 3 blades, $18.....net
Lothrop's..... .....20&10%
Smith's, ₱ doz, Single, $2.00; Double, $3 .....40@45%
Knapp & Cowles.....50&10@60%
Buffalo Adjustable..₱ doz $3.00 25%
Buffalo Double Adj'table, ₱ doz $3.00 25%

Knobs—

Door Mineral..... .....60@65%
Door Por. Jap'd.....70@75%
Door Por. Nickel.....$2.00@2.25
Door Por. Plated, Nickel.....$2.00@2.25
Drawer, Porcelain.....60@10&60&10&10%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885...40%
Furniture Plain.....75¢ gro inch, 10%
Furniture, Wood Screws.....25&10%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Picture, Hemacite.....35&5%
Shutter, Porcelain.....65&10%
Carriage, Jap.....₱ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c..40%

Ladles,— Melting, Sargent's.....55&10%
Melting, Reading. ....35&10%
Melting, Monroe's Pat..₱ doz $4.00, 40%
Melting, P. S. & W.....35&10@40%
Melting, Warner's.....30%

Lanterns—

Tubular—

Plain with Guards, ₱ doz.....$4.00@4.25
Lift Wire, with Guards.....$4.50@4.75
Square Plain, with Guards....$4.00@4.25
Sq. Lift Wire, with Guards....$4.25@4.50
Without Guards, 25¢ ₱ doz less.

Miscellaneous.

Police, Small, $6.00; Medium, $7.25; Large, $9.75.....20@25%

Lawn Mowers—See Mowers, Lawn.

Leaders, Cattle.

Humason. Beckley & Co.'s.....70%
Sargent's.....60%&10%
Hotchkiss..... .....30%
Peck, Stow & W. Co..... ..60&10%

Lemon Squeezers—See Squeezers, Lemon.

Lifters, Transom.

Wollensak's:
Class 3 and 4, Bronzed Iron.....50%
Class 3 and 4, Bronze Metal.....25%
Class 3 and 4, Brass.....35%
Skylight Lifters.....35%
Crown, Eagle and Shield.....50%
Reiher's, list Aug. 1, 1889-
Bronzed Iron Rods.....50&10&10&2%
Brass, Real Bronze or Nickel Plate..30%
Excelsior.....50&10&2%
Shaw's.....50&10%
Payson's Universal.....40@40&10%

Lines—

Cotton and Linen Fish, Draper's.....50%
Draper's Chalk.....60%
Draper's Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....25%
Cotton Chalk.....55%
Samson, Cotton, No. 4, $2; No. 4½, $2.50; No. 5, $3.00.....10%
Silver Lake, Braided, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₱ gro.....25%
Mason's Linen, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50.
Mason's Colored Cotton.....45%
Wire Clothes.. Nos. 18 19 20
100 ft. $4 00 $3 50 $3.00
Ventilator Cord, Samson Braided, White or Drab Cotton..₱ doz $7.50, 20%

Locks, &c.—

Cabinet—

Eagle, Gaylord Parker and Corbin... } List March, '84, Jan. 1, '85..33⅓&2%
Deitz, Nos. 36 to 39.....40%
Deitz, Nos. 51 to 63.....40&10%
Deitz, Nos. 86 to 96.....30%
Stoddard Lock Co.....30&33⅓%
"Champion" Night Latches.....40%
Barnes Mfg. Co.....40@40&10%
Eagle and Corbin Trunk.....25&2%
"Champion" Cab. and Combin...33⅓%
Yale.....net prices
Romer's.....25%

Door Locks, Latches, &c.

R. & E. Mfg. Co. list Mar. 20, 1889..... } 60&10@60 &10&10
Mallory, Wheeler & Co., list July, '88..... } Much lower net prices often made.
Sargent & Co., list Aug. 1, '88
Reading Hardware Co., list Feb. 2, '88.....
Brittan, Graham & Mathes, list Jan. 1890.....60&10&10%
Perkins' Burglar Proof.....60&25%
Plate.....33⅓&2%
Barnes Mfg. Co.....40&40&10%
Yale.....net prices
Deitz Flat Key.....30%
L. & C. Round Key Latches.....50&10%
L. & C. Flat Key Latches.....33⅓&10%
Romer's Night Latches.....15%
Shepardson or U. S.....35%
Seed's N. Y. Harp Lock.....25%

Padlocks—

List Dec. 23, '84. .....75@75&10%
Brittan, Graham & Mathes.. .... 75&10%
Yale Lock Mfg. Co.'s.....net prices
Eagle.....25&2%
Eureka, Eagle Lock Co.....40&2%
Romer's, Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to 505..15%
A. E. Deitz.....40%
Champion Padlocks.....40%
Hotchkiss.....30%
Star.....45%
Horseshoe.....₱ doz, $9. 40@40&10%
Barnes Mfg. Co.....40@40&10%
Nock's.....30%
Brown's Pat.....25%
Scandinavian.....90@90&10%
E. T. Fraim's Keystone Scandavian: Nos. 110, 120, 130 and 140..... .90&10%
Other Nos.....65%
Ames Sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....50%

Sash, &c.

Clark's, No. 1, $10; No. 2, $8 ₱ gr. .33⅓%
Ferguson's.....33⅓%
Morris and Triumph, list Aug. 16, 1886. 60&2%
Victor.....60&10&2%
Walker's.....10%
Attwell Mfg. Co.....25&33⅓%
Reading.....66⅔&10@66⅔&10&10%
Hammond's Window Springs.....40%
Common Sense, Jap'd, Cop'd and Br'zed.....₱ gr $4.00
Common Sense, Nickel Plated ₱ gr $10.00
Universal.....30%
Kempshall's Gravity.....60%
Kempshall's Model.....60@60&10%
Corbin's Daisy, list Feb. 15, 1886.....70%
Payson's Perfect.....60@60&10%
Hugunin's Sash Balances.....25&5&2%
Hugunin's New Sash Locks.....25&5&2%
Stoddard "Practical".....10%
Ives' Patent.....60@60&10%
Lieseche's, Nos. 100 and 110, ₱ gr $8; 105, $10.00. .....20&10%
Davis, Bronze, Barnes Mfg. Co..... 50%
Champion Safety, list March 1, 1888 55@55&5%
Security.....70%
Buckeye.....₱ gro $4.80

Lumber Tools—See Tools, Lumber.

Lustre—

Four-ounce Bottles....₱ doz, $1.75; ₱ gross..... .....$17.00

Machines.

Boring—

	Without Augers.	Upright.	Angular.	
Douglas.....	.....$5.50	$6.75	.....	50%
Snell's, Nice's Pat.	5.50	6.75	...40&10	&10
Jennings	5.50	6.75	...45@45	&10
Other Machines...	2.35	2.75	.....	net
Phillips' Patent with Augers ...	7.00	7.50	.....	

Fluting.

Knox, 4¼-inch Rolls .....$3.25 each } 35%
Knox, 6-inch Rolls.. .....$3.60 each }
Eagle, 3¼-inch Roll, $2.15.....35%
Eagle, 5¼-inch Roll, $2.85.....35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each 35%
Crown Jewel, 6 in .....$5.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each.....35%
Domestic Fluter .....each, $1.50
Geneva Hand Fluter, White Metal ₱ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; $12.50; 3, $10.00. ....30%
Shepard Hand Fluter, No. 85 ₱ doz $15.30 ....40%

Shepard Hand Fluter, No. 110 ₱ doz $11.00.....40%
Shepard Hand Fluter, No. 95 ₱ doz $8.00.....40%
Clark's Hand Fluter. ₱ doz $15.00.....35%
Combined Fluter and Sad Iron, ₱ doz $15.00.....30%
Buffalo ..... ₱ doz $10.00.....10%

Hoisting—
Moore's Hand Hoist, with Lock Brake.....20%
Moore's Differential Pulley Block....40%
Energy Mfg. Co's.....25%

Mallets.

Hickory.....20&10@20&10&10%
Lignumvitæ.....20&10@20&10&10%
B. & L. Block Co., Hickory & L. V. 30@30&10%

Mattocks. Regular list.....60&5%

Measures—

Standard Fiberware, No. 1, peck, ₱ dozen, $4; ½-peck, $3.50.

Meat Cutters—See Cutters, Meat.

Mills.

Coffee—
Box and Side, List Jan. 1, 1888....60&2%
American, Enterprise Mfg Co.20&10@30%
The Swift, Lane Bros.....20&10%

Mincing Knives—See Knives, Mincing.

Molasses Gates—See Gates, Molasses.

Money Drawers—See Drawers, Money.

Mowers, Lawn.

Leading makers.....60@60&10&5%
Other makers.....60@10&5%@60&10&10%
Pennsylvania.....60%
Continental.....60%
New Model.....60&10&5
New Quaker City.....60&10&5%
Great American.....60&10&5%

Muzzles—

Safety.....₱ doz. $3.00, 25%

Nails.

Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, July 15, '89..70&10&5%
Tack Mfrs.' list.....60&10&10%
Wire Nails, Standard Penny.
Card June 1, '89, base.....$2.60 @ $2.70

Horse—

Nos.	6	7	8	9	10
Ausable....	28¢	26¢	25¢	24¢	23¢.

25&10@25&10&10%
Clinton, Fin.....10½ @ 11¢, net
Essex ....28¢ 26¢ 25¢ 24¢ 23¢.
25&10@25&10&10%
Lyra .....25¢ 23¢ 22¢ 21¢ 20¢.
40&10&5@50%
Snowden 25¢ 23¢ 22¢ 21¢ 20¢.
40&10&5@50%
Putnam.....23¢21¢ 20¢ 19¢ 18¢.
1000 ℔ in year 15%
Vulcan.....23¢ 21¢ 20¢ 19¢ 18¢..12½&5%
Northwest'n.25¢ 23¢ 22¢ 21¢ 20¢.
25@25&5%
Globe .....23¢ 21¢ 20¢ 19¢ 18¢..20&2½%
Boston.....23¢ 21¢ 20¢ 19¢ 18¢..20&2½%
A. C.....25¢ 23¢ 22¢ 21¢ 20¢.
25&10@33½&5%
C. B.-K.....25¢ 23¢ 22¢ 21¢ 20¢.
25%10@33½&5%
Champlain 28¢ 26¢ 25¢ 24¢ 23¢.
25&10&10%
New Haven..28 26¢ 25¢ 24¢ 23¢.
25&10@25&10&10%
Saranac.....23¢ 21¢ 20¢ 19¢ 18¢...30&10%
Champion ...25¢ 23¢ 22¢ 21¢ 20¢.
10&10&10%
Capewell.....28¢ 26¢ 25¢ 24¢ 23¢.
35&5@35&10%
Star.....23¢ 21¢ 20¢ 19¢ 18¢.
10&10@10&12½%
Anchor.....23¢ 21¢ 20¢ 19¢ 18¢.....35%
Western....23¢ 21¢ 20¢ 19¢ 18¢...40&10%
Empire Bronzed.....14 ₱ ℔.

Picture—
Brass Head, Sargent's list.....50&10&10%
Brass Head, Combination list.....50&10%
Porcelain Head, Sargent's list.50&10&10%
Porcelain Head, Combination list..40&10%
Niles' Patent.....40%

Nail Pullers.—See Pullers, Nail.

Nail Sets.—See Sets, Nail.

Nut Crackers.—See Crackers, Nut.

Nuts—

Nuts, off list Dec. 18,1889: Square, Hex. Hot Pressed.....5.55¢ 6.10¢
Cold Punched.....5.10¢ 5.60¢
In lots less than 100 ℔, ₱ ℔, add ½¢; 1-℔ boxes, add 1¢ to list.

Oakum—

Government.....₱ ℔ 7@7½¢
U. S. Navy.....₱ ℔ 6@6¼¢
Navy.....₱ ℔ 5¼¢@5½¢

Oilers—

Zinc and Tin .....65@65&10%
Brass and Copper .....50&10&50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₱ doz. 10&10&5%
Malleable, Hammers, Old Pattern, same list 40%
Prior's Pat. or "Paragon" Zinc, 60&10&10%
Prior's Pat. or "Paragon" Brass.....50%
Olmstead's Tin and Zinc.....60%
Olmstead's Brass and Copper 50%
Broughton's Zinc.....60%
Broughton's Brass 50%
Gem P. D. & Co. .....₱ gro. $2
Steel, Draper and Williams.....50%

Openers, Can.

Messenger's Comet.....₱ doz $3.00, 25%
American.....₱ gross $3.00
Duplex.....doz 25¢, 15@20%
Lyman's.....₱ doz $3.75, 20%
No. 4 French.....₱ doz $2.25, 55@60%
No. 5, Iron Handle.....₱ gr $6.00, 45&50%
Eureka.....₱ doz $2.50, 10%
Sardine Scissors.....₱ doz $2.75@3.6.
Star.....₱ doz $2.7[illegible]
Sprague, No. 1, $2.00 2, $2.25; 3, $2.50 50&10&10%
World's Best, ₱ gross, No. 1, $12.60 No. 2, $24.00; No. 3, $36.00.....50&10%
Universal, ₱ doz $3.00.....35@5%
Domestic, ₱ doz $2.50.....40%
Champion ₱ doz $2.00 .....

Packing, Steam—

Rubber—

Standard .....60&10@60&10&10%
Extra .....50&10@60%
N. Y. B. & P. Co., Standard ...50&10&5%
N. Y. B. & P. Co., Empire 70%
N. Y. B. & P. Co., Salamander.
Jenkins' Standard.....₱ ℔ 65¢, 30%
₱ ℔ 80¢, 35%

Miscellaneous—
American Packing.....10¢@11¢ ₱ ℔
Russia Packing .....14¢ ₱ ℔
Italian Packing .....13¢@14¢ ₱ ℔
Cotton Packing .....15¢@17¢ ₱ ℔
Jute.....7¢@8¢ ₱ ℔

Padlocks—See Locks.

Parers.

Apple.
Advance.....₱ doz $4.75
Antrim Combination.....₱ doz 5.50
Baldwin.....₱ doz 5.25
Champion.....₱ doz 7.25
Daisy.....₱ doz 4.00
Eureka, 1888.....each 17.00
Family Bay State.....₱ doz 12.00
Favorite .....₱ doz 5.00
Gem.....₱ doz 5.25
Gold Medal.....₱ doz 4.00
Ideal.....₱ doz 4.00
Improved Bay State.....₱ doz 30.00
Little Star.....₱ doz 4.50
Monarch.....₱ doz 13.50
New Lightning.....₱ doz 5.50
Oriole.....₱ doz 4.00
Penn.....₱ doz 4.00
Perfection.....₱ doz 4.00
Pomona.....₱ doz 4.00
Rocking Table.....₱ doz 6.00
Turntable.....₱ doz 4.50
Victor.....₱ doz 13.50
Waverly.....₱ doz 4.00
White Mountain.....₱ doz 4.50
72.....₱ doz 4.25
76.....₱ doz 5.75
78.....₱ doz. 6.50

Potato—
White Mountain .....₱ doz $5.00@5.50
Antrim Combination.....₱ doz $8.00
Hoosier.....₱ doz $13.50

Pails.

Galvanized Iron—

Quarts	10	12	14
Hill's Light Weight, ₱ doz.	$2.75	3.00	3.25
Hill's Heavy Weight, ₱ dz.	3.00	3.25	3.75
Whiting's	2.75	3.00	3.25
Sidney Shephard & Co....	2.94	3.15	3.57
Iron Clad	2.50	2.75	3.00
Fire Buckets	2.75	3.25	3.50

Buckets, see Well Buckets.

Indurated Fibre Ware—25%
Star Pails, 12 qt .....₱ doz $6.00
Fire, Stable and Milk, 14 qt ..₱ doz $7.80

Standard Fibre Ware—

	Plain.	Deer'd
Water Pails, 12 qt., per doz.	$4.00	$4.50
Dairy Pails, 14 qt., per doz.	4.50	5.00
Fire Pails, No. 1, 12 qt. per doz	4.50	
Fire Pails, No. 2, 14 qt. per doz	5.00	
Sugar Pails	6.00	6.50
Horse Pails	5.50	
Buggy Pails	4.00	
Slop Jars (bal. trap)	8.00	9.00
Chamber Pails, 14-qt	6.50	7.50

Pans.

Dripping.
Small sizes.....₱ ℔ 6¼¢
Large sizes.....₱ ℔ 5¾¢

Fry—
Standard List:

No.	0	1	2	3	4
₱ doz	$3.00	$3.75	$4.25	$4.75	$5.25
No.	5	6	7	8	
₱ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods.....70&10%
Acme Fry Pans .....60&10%

Paper and Cloth—

Sand and Emery—
List April 19, 1886.....50@50&10%
Sibley's Emery and Crocus Cloth.....30%

Pencils—

Faber's Carpenters'..... ..high list 50%
Faber's Round Gilt.....₱ gro $5.25
Dixon's Lead..... .....₱ gro $4.50
Dixon's Lumber.....₱ gro $6.75
Dixon's Carpenters' ....40&10%

Picks—

Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00.....60@60&5%

Picture Nails.—See Nails, Picture.

Pinking Irons.—See Irons, Pinking.

Pins.

Bow—
Humason, Beckley & Co.'s.....60&10%
Sargent & Co's....$17 and $18.....60&10%
Peck, Stow & W. Co.. 50&10&50&10%

Curtain—
Silvered Glass.....net
White Enamel.....net

Escutcheon,
Iron, list Nov. 11, 1885..50&10@50&10&5%
Brass.....60@60&5%

Pipe, Wrought Iron—

List September 18, 1889.

1¼ and under, Plain 47½%
1¼ and under, Galvanized 40%
1½ and over, Plain.....60%
1½ and over, Galvanized 47½%

Boiler Tubes, Iron.
1¾ and under.....45%
2 to 4 inch.....50%
4-inch and larger.....52½%

Planes and Plane Irons—

Wood Planes—
Molding.....45&2%
Jench, First Quality.....55&2%
Bench, Second Quality.....60&2%
Bailey's (Stanley R. & L. Co.)....40&10%

Iron Planes—
Bailey's (Stanley R. & L. Co.)..... 40&10@40&10&10%
Miscellaneous Planes (Stanley R. & L. Co.) .....20&10@20&10&10%
Victor Planes (Stanley R. & L. Co.). ..... 20&10@20&10&10%
Steer's Iron Planes.....35@35&10%
Merrien Mal. Iron Co.'s.....40@40&10%
Davis's Iron Planes .....40@40&10%
Birmingham Plane Co.....50@50&10%
Gage Tool Co.'s Self-Setting.....20&10%
Chaplin's Iron Planes .....40@40&10%
Sargent's .....30&10@30&10&10%
Standard Tool Co.....50@50&5%

Plane Irons—
Butcher's.....$5.00@$5.25 to 2
Buck Bros 30%
Auburn "Thistle..... .....
Ohio..... } 35&2%
Landusky..... }
S. & I. J. White.....25%

Plates.

Felloe .....₱ ℔ 6¢@6½¢

Pliers and Nippers—

Button's Patent.....30&10@40%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in. $21.00 ₱ doz .....20&10@33½%
Humason & Beckley Mfg. Co..50@50&10%
Gas Pliers.....60%
Gas Pliers, Custar's Nickel Plated..60&5%
Eureka Pliers and Nippers 40%
Russell's Parallel 25%
P. S. & W. Cast Steel 50%
P. S. & W. Tinners' Cutting Nippers, add 6% dis 10%
Carew's Pat. Wire Cutters.....20%
Morrill's Parallel, ₱ doz, $12.00....30&5%
Cronk's 8 in., $15.00; 10 in. $21.00, 40@40&5%

Plumbs and Levels—

Regular List .....70&10@70&10&10%
Disston's. .....45&10%
Pocket Levels.....70&10@70&10&10%
Davis Iron Levels.....30%
Davis' Inclinometers .....10&10%

Poachers.

Egg.
Buffalo Steam Egg Poachers, ₱ doz, No. 1, $6.00; No. 2, $9.00.....25%

Police Goods.

R. I. Tool Co., Handcuffs, $15.00₱ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₱ doz 10%
Tower's.....25%
Daley's Improved Handcuffs: 2 Hands, Polished, ₱ doz $48.00; Nickeled, $57.00; 3 Hands, Polished, ₱ doz $72.00; Nickeled, $84.00.....25%
J. P. Lovell's Police Goods..... 25%

Polish, Metal.

Prestoline.....20&10%
Prestoline Paste 33⅓%
Gaston's Silver Compound.....33⅓%

Pokes, Animal—

Bishop's I. X. L.....₱ doz $6.00
Bishop's O. K..... .....₱ doz $5.25
Bishop's Pioneer..... ..₱ doz $3.75
Bishop's American.... .....₱ doz $2.75

Polish, Stove.

Joseph Dixon's.....₱ gro $6.00, 10%
Gem.....₱ gro $4.50, 10%
Gold Medal.....₱ gro $6.00, 25%
Mirror .....₱ pro $6.00, —%
Lustro .....₱ gro $4.75
Ruby .....₱ gro $3.75
Rising Sun, 5 gro lots .....₱ gro $5.50
Dixon's Plumbago..... ..₱ ℔ $5.00
Boynton's Noon Day, ₱ gro 13.00
Parlor Pride Stove Enamel..₱ gro $ cans
Yates' Liquid, 2 3 5 10 gal....8¢ ₱ gal ...$0.90 .80 .70 .60
Yates Standard Paste Polish, 10-℔ cans, ₱ ℔ 15¢
Jet Black .....₱ gro $3.50
Japanese. .....₱ gro $3.50
Fireside..... .....₱ gro $2.50
Diamond O. K. Enamel.....₱ gro $19.00
Bonnell's Liquid Stove Polish..₱ gro $9.00
Bonnell's Paste Stove Polish..₱ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ℔ cans .....12½¢
Black Jack Water Paste, 5 and 10 ℔ cans .....12½¢
Nickel Plate Paste .....₱ gro $6.00

Poppers, Corn—

Round or Square, 1 qt..₱ gr $10.00@10.50
Round or Square, 1½ qt..₱ gr $15@15.50
Round or Square, 2 qt..₱ gr $18.50@19.00

Post Hole and Tree Augers and Diggers—See Diggers, Post Hole, &c.

Potato Parers—See Parers, Potato.

Pots.

Glue—
Tinned.....40%
Enameled.....40&5%
Family, Howe's "Eureka".....40%
Family, L. F. C.'s "Handy" 50%

Presses.

Fruit and Jelly—
Enterprise Mfg. Co.....20&10@30%
Henis .....₱ doz $2.50
Shepard's Queen City 40%

Pruning Hooks and Shears.—See Shears.

Pullers.

Nail.
Curtiss Hammer..... .....₱ doz $9.00
Giant, No. 1.....₱ doz. $18.00, 10%
Giant, No. 2.....₱ doz, $15.00, 10%
Pelican.....₱ doz, $9.00, 25%

Pulleys—

Hot House, Awning, &c.....60&10%
Japanned Screw..... ..... 60&10%
Brass Screw .....60&10%
Japanned Side.....60%&10%
Japanned Clothes Line.....60&10%
Empire Sash Pulley.....55@60%
Moore's Sash, Anti-Friction.....50%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50.....50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. Solid, $5.70 .....50%
Hay Fork, "F" Common and Pat. Bushed 20%
Hay Fork, Tarbox Pat. Iron.....20%
Hay Fork, Reed's Self-Lubricating ...60%
Shade Rack 45%
Tackle Blocks.....See Blocks
Moore's Anti-Friction 5 in. Wheel, ₱ doz $12.00..... 40

Pumps—

Cistern, Best Makers .....60@60&10%
Pitcher Spout, Best Makers....67½@70%
Pitcher Spout, Cheaper Goods.70@70&5%

Punches—

Saddlers' or Drive, good, ₱ doz...60@65¢
Bemis & Call Co.'s Cast Steel Drive..50&5%
Bemis & Call Co's Springfield Socket.50&5%
Spring, good quality.....₱ doz $2.50@2.60
Spring, Leach's Pat.....15%
Bemis & Call Co.'s Spring and Check ..40%
Solid Tinners', P.S.&W.Co., ₱ doz$1.44, 55%
Tin'rs' Hollow Punches P.S.&W.Co.20&2%
Rice Hand Punches 15%
Avery's Revolving.....40%
Avery's Saw-Set and Punch. See Saw Sets.

Rail—

Sliding Door, Wr't Brass, ₱ ℔ 35¢.....15%
Sliding Door, Bronzed Wr't Iron..₱ ft. 7¢
Sliding Door, Iron, Painted, ₱ foot 4¢, 40%
Barn Door, Light, In. ½ ¾ ¾
Per 100 feet.....$2.00 2.50 3.10, 10%
B. D. for N. E. Hangers—
Small. Med. Large.
Per 100 feet....$2.15 2.70 3.25..net
Terry's Steel Rail, ₱ foot.....4½¢
Victor Track Rail, 7¢ ₱ foot.....50&2%
Carrier Steel Rail, ₱ foot.....4½¢
Moore's Wrought Iron.....25%

Rakes—

Cast Steel, Association goods 70%
Cast Steel, outside goods 60&10&10@70&5%
Malleable.....70@70&5%
Gibbs Lawn Rake.....$12.00, 50&1
Canton Lawn Rake..... .....$9.00, 50&10
Ft. Madison Prize Bow Brace and Peerless 65%
Fort Madison Steel Tooth Lawn Rake, $6.00..... .....25%

Razor

J. R. Torrey Razor Co 20%
Wostenholme and Butcher, $10.00 to £, 10%
Jordan's AAA1, list Nov. 1, 1889.....50%
Jordan's Old Faithful, list Nov. 1, '89.50%
Electric.....List net

Razor Strops—See Strops, Razor.

Rings and Ringers.

Bull Rings—
Union Nut Co.....55%
Sargent's.....66⅔&10@70&5%
Hotchkiss' low list.....30%
Humason, Beckley & Co.'s.....70&10%
Peck, Stow & W. Co's..50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50@50&10%

Hog—
Top of the Hill Ringers.....₱ doz $2.00
Top of the Hill Rings.....₱ doz $1.25
Hill's Improved Ringers. . ..₱ doz $4.25
Hill's Old Style Ringers.....₱ doz $2.75
Hill's Tongs. .....₱ doz $4.50
Hill's Rings.....₱ doz bxs $2.15@2.25
Perfect Rings.....₱ doz bxs $1.60@1.70
Perfect Ringers.....₱ doz $2.15@2.25
Blair's Hog Ringers.....₱ doz $2.25@2.50
Blair's Hog Rings.....₱ doz 90¢@$1.00
Champion Ringers..... ...₱ doz $2.00
Champion Rings, Double.....₱ doz $2.25
Brown's Ringers.....₱ doz $2.00
Brown's Rings.....₱ doz $1.25@1.30

Rivets and Burrs—

Iron, list Nov. 17, '87.....40%
Copper.....50@50&10%

Rivet Sets—See Sets.

Rods—

Stair, Brass .....25&2%
Stair, Black Walnut .. ..₱ doz 40¢

Rollers—

Barn Door, Sargent's list .....60&10&10%
Acme Moore's Anti-Friction.....55%
Union Barn Door Roller 70%

Rope—

Manufacturers' prices:
Manila...½ in. and larger ₱ ℔ 15 ¢
Manila.....⅜ in. ₱ ℔ 15½¢
Manila.....¼ and 5-16 in. ₱ ℔ 15½¢
Manila Tarred Rope.....₱ ℔ 14½¢
Manila, Hay Rope.....₱ ℔ 15 ¢
Sisal...½ inch and larger ₱ ℔ 12 ¢
Sisal.....⅜ in. ₱ ℔ 12½¢
Sisal.....¼ and 5-16 in. ₱ ℔ 12½¢
Sisal, Hay Rope..... .....₱ ℔ 12 ¢
Sisal, Tarred Rope.....₱ ℔ 11½¢
Sisal, Medium Lathe Yarn.₱ ℔ 11 ¢
Cotton Rope.....₱ ℔ 15@18¢ net
Jute Rope.....₱ ℔ 7½¢

1½% for cash in 10 days.

Wire—
List May 1, 1886.
Iron.....30%
Iron, Galvanized.....27½%
Cast Steel.....35%

Rules—

Boxwood.....80&10&10@80&10&10&5%
Ivory..... .....50@50&10%
Starrett's Rules and Straight Edges, Steel..... .....25&10%

Sad Irons—See Irons, Sad.

Sand and Emery Paper and Cloth—See Paper and Cloth, Sand and Emery.

Sash Cord—See Cord, Sash.

Sash Locks—See Locks, Sash.

Sash Weights—See Weights, Sash.

Sausage Stuffers or Fillers—

See Stuffers or Fillers, Sausage.

Saws—

Disston's Circular.....45@45&5%
Disston's Cross Cuts.....45@45&5%
Disston's Hand 25@25&5%

Extras some times given by jobbers.

Atkins' Circular Shingle and Heading ..... 50¢
Atkins' Silver Steel Diamond X Cuts ₱ foot 70¢
Atkins' Special Steel Dexter X Cuts ₱ foot 50¢
Atkins' Special Steel Diamond X Cuts ₱ foot 30¢
Atkins' Champion and Electric Tooth X Cuts ₱ foot 24@25¢
Atkins' Hollow Back X Cuts. ₱ foot 18¢
Atkins' Mulay, Mill and Drag 40%
Atkins' One-Man Saw, with handles, ₱ foot 32¢
W. M. & C., Hand ..... 30&5&30&10%
W. M. & C., Champion X Cuts, Regular ₱ foot 24@26¢
W. M. & C. X Cuts, Thin Back ₱ foot 27¢@29¢
Peace Circular and Mill ..... 45&10%
Peace Hand Panel and Rip 20&10@20&10&10%
Peace Cross Cuts, Standard ₱ foot 25¢
Peace Cross Cuts, Thin Back ₱ foot 27@28¢
Richardson's Circular and Mill 45@45&10%
Richardson's X Cuts, No. 1, 39¢; No. 2, 27¢; No. 3, 24¢

Hack Saws—
Griffin's, complete ..... 40&10@50%
Griffin's Hack Saw, Blades ..... 40&10@50%
Star Hack Saws and Blades 25%
Eureka and Crescent 25%

Scroll—
Lester, complete, $10.00 ..... 25%
Rogers, complete, $4.00 ..... 25%
Barnes' Builders' and Cabinet Makers', $15 ..... 25%
Barnes' Scroll Saw Blades 35%

Saw Frames—See Frames, Saw.

Saw Sets—See Sets, Saw.

Saw Tools—See Tools, Saw.

Sets.

Awl and Tool.
Aiken's Sets, Awls and Tools, No. 20, ₱ doz $10.00 ..... 55&10%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9 ..... 25@25&10%
Miller's Falls Adj. Tool Hdls., Nos. 1, $12. 2, $18 ..... 25%
Henry's Combination Haft ₱ doz $6.50
Brad Sets, No. 42, $10.50; No. 43, $12.50 ..70&10&5%
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50 ..... 30&10%

Nail—
Square ₱ gr., $4.00@$4.25
Round ₱ gr. $3.25
Buck Bros. 27½%
Cannon's Diamond Point ₱ gr., $12, 20%

Rivet.
Regular list ..... 50&10%

Saw—
Stillman's Genuine ₱ doz $5.00@7.75, 40&5%
Stillman's Imita ₱ doz $3.25@5.25, 40&5@40&10%
Common Lever ₱ doz $2.00, 40&5%
Morrill's No. 1, $15.00; Nos. 3&4, $24.00, 40&10@50%
Leach's. No. 0, $8.00; No. 1, $15, 15@20%
Nash's ..... 20&10@20&10&10%
Hammer, Hotchkiss $5.50, 10%
Hammer, Bemis & Call Co.'s new Pat. 30&5%
Bemis & Call Co.'s Lever and Spring Hammer ..... 30&5%
Bemis & Call Co.'s Plate 10%
Bemis & Call Co.'s Cross Cut 12½%
Aiken's Genuine ..... $13.00, 50&10%
Aiken's Imitation ..... $7.00, 55&5%
Hart's Pat. Lever 20%
Disston's Star, ₱ No. 15, $5.50; 20& 10@20&10@10%
Atkin's Lever ₱ doz No. 1, $6.00
Atkin's Criterion ₱ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00 ..... 40&10%
Avery's Saw Set and Punch 50%
Chieftain H. R. Co.'s Superior ₱ doz $15, 50%

Scales—

Hatch, Counter, No. 171, good quality, ₱ doz $21.00
Hatch, Tea, No. 161 ₱ doz $6.75@$7.00
Union Platform, Plain ..... $2.10@2.20
Union Platform, Striped ..... $2.20@2.30
Chatillon's Grocers' Trip Scales 50%
Chatillon's Eureka 25%
Chatillon's Favorite 40%
Family, Turnbulls ..... 30@30&10%
Riehle Bros.' Platform 40%

Scale Beams—See Beams, Scale.

Scissors, Fluting 45%

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.) $6.50 ..... 30&10%
Box, 1 Handle ₱ doz $4.00, 10%
Box, 2 Handle ₱ doz $6.00, 10%
Defiance Box and Ship ..... 20&10%
Foot ..... 50&10@60%
Ship, Common ₱ doz $3.50 net
Ship, R. I. Tool Co. 10%

Screen Window and Door Frames—See Frames.

Screw Drivers—See Drivers, Screw.

Screws.

Bench and Hand—
Bench, Iron ..... 55&10@55&10&10%
Bench, Wood, Beech ₱ doz $2.25
Bench, Wood, Hickory ..... 20&10%
Hand, Wood ..... 25&10@25&10&5%
Lag, Blunt Point, list Jan. 1, 1890. 75&10%
Coach and Lag. Gimlet Point, list Jan. 1, 1890 ..... 75%
Bed ..... 25&5%
Hand Rail, Sargent's ..... 66⅔&10%
Hand Rail, H. & B. Mfg. Co ..... 70&10@75%
Hand Rail, Am. Screw Co. 75%
Jack Screws, Millers Falls list ..50@50&5%
Jack Screws, P. S. & W. 35%
Jack Screws, Sargent ..... 60&10@60&10&5%
Jack Screws Stearns' ..... 40@40&10%

Cork—
Humason & Beckley Mfg. Co. ..40&10@50%
Williamson's ..... 33⅓@33⅓&5%
Howe Bros & Hulbert 35%

Machine—
Flat Head, Iron 55%
Round Head, Iron 50%

Wood—
List March 1, 1889.
Flat Head Iron 50%
Round Head Iron 40%
Flat Head Brass 45%
Round Head Brass 35%
Flat Head Bronze 45%
Round Head Bronze 35%
Extra 5 @ 10 % often given.
Rogers' Drive Screws 66⅔%

Scroll Saws—See Saws, Scroll.

Scythe Snaths—See Snaths, Scythe.

Sharpeners, Knife.

Parkin s.
Applewood Handles ₱ doz $6.00, 40%
Rosewood or Cocobolo. ₱ doz $9.00, 40%

Shaves, Spoke.

Iron 45%
Wood 30%
Bailey's (Stanley R. & L. Co.) ..... 40&10%
Stearns' ..... 30&10%
Cincinnati ..... 25&10%

Shears—

American (Cast) Iron ..75&10@75&10&5%
Pruning ..See Pruing Hooks and Shears.
Barnard's Lamp Trimmers ₱ doz $3.75
Tinners' ..... 20&2%
Seymour's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's Tailor's Shears 33⅓%
First quality C. S. Trimmers. .80@80&10%
Second quality C. S. Trimmers. 80&10@80&10&10%
Acme Cast Shears ..... 10&10%
Diamond Cast Shears 10%
Clipper ..... 10&10%
Victor Cast Shears ..... 75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel 40%
Chicago Drop Forge & F. Co., Solid Steel Forged 60%
Clauss Shear Co., Japanned 70%
Clauss Shear Co., Nickeled, same list. 60%
Electric ..... List net

Pruning Shears and Hooks.
Disston's Combined Pruning Hook and Saw ₱ doz $18.00, 20&10%
Disston's Pruning Hook, ₱ doz $12.00, 20&10%
E. S. Lee & Co.'s Pruning Tools 40%
Pruning Shears, Henry's Pat, ₱ doz $3.75@4.00 net
Henry's Pruning Shears, ₱ doz $4.25@ 4.50 net
Wheeler, M. & C. Co.'s Combination, ₱ doz $12.00, 20%
Dunlap's Saw and Chisel, ₱ doz $8.50, 30%
J. Mallinson & Co., No. 1, $5.25: No. 2 7.25
P., S. & W. Co. 60%

Tinners', &c.—
Shears and Snips (P. S. & W.) ..... 20@25%
Snips, J. Mallinson & Co. 33⅓%

Sheaves—

Sliding Door—
M. W. Co., list July, 1888 ..50&10@60&5%
R. & E., list Dec. 18, 1885 ..... 55&20%
Corbin's list ..... 60&10&2%
Patent Roller ..... 60&10&2%
Patent Roller, Hatfield's 75%
Russell's Anti-Friction, list Dec. 18, 1885 ..... 60&2%
Moore's Anti-Friction 50%

Sliding Shutter—
R. & E. list Dec. 18, 1885 ..... 60&10&2%
Sargent's list ..... 60&10%
Reading list ..... 60&10&10%

Ship Tools—

L. & I. J. White ..... 20&5%

Shoes, Horse, Mule, &c.—

Horse—
Burden's, Perkins', Phœnix, at factory. $4.00

Mule—
Add $1 ₱ keg to above prices.

Ox, Wrought—
Ton lots ..... ₱ ℔ 9¢
1000 ℔ lots ..... ₱ ℔ 9½¢
500 ℔ lots ..... ₱ ℔ 10¢

Shot—

(Eastern prices 2¢ off, cash, 5 days.
Drop, ₱ bag, 25 ℔ $1.19
Drop, ₱ bag, 5 ℔ ..... .20
Buck and Chilled, ₱ 25-℔ bag 1.44
Buck and Chilled, ₱ 5-℔ bag ..... .34

Shovels and Spades—

Ames' Shovels, Spades, &c., list Nov. 1, 1885 ..... 20%
NOTE.—Jobbers frequently give 5&7½% extra on above.
Griffith's Black Iron ..... 50&10%
Griffith's C. S. ..... 60@60&10%
Griffith's Solid C. S. R. R. Goods 20%
Old Colony (Sanford Fork & Tool Co) .35%
St. Louis Shovel Co. ..... 20@20&7½%
Hussey, Binns & Co. ..... 15@25%
Hubbard & Co. ..... 20@20&7½%
Lehigh Mfg. Co. ..... 50&10%
Payne Pettebone & Son, list January, 1886 ..... 30%
Remington's (Lowman's Pat.) ..... 10@40%
Rowland's, Black Iron ..... 50&10%
Rowland's Steel ..... 60&5@60&10%

Shovels and Tongs—

Iron Head ..... 60&10@60&10&5%
Brass Head ..... 60&10&10%

Sleeves—

Mann's Tin Rim ..... 50&25%
Buffalo Metallic, S. S. & Co. ..... 50&25%
Shaker (Barler's Pat.) Flour Slifters. ₱ doz $2.00; ₱ gr $21.60
Electric ..... ₱ gr $21.00
A. & W. Sifters ..... ₱ doz 2.00
Hunter's ..... ₱ doz $2.00
Smith's Adjustable Sifters ₱ doz $2.00
Smith's Adjustable Milk Strainer. ₱ doz $2.00
Smith's Adjustable T. & C. Strainer. ₱ doz. $1.25

Sieves, Wooden Rim—

	Iron.	Plated.
Mesh 18, Nested, ₱ doz..	80¢	$1.00
Mesh 20, Nested, ₱ doz..	95¢	1.10
Mesh 24, Nested, ₱ doz..	$1.15	1.25

Skeins, Thimble—

Western list ..... 75&5@75&10%
Columbus Wrt. Steel, list Jan. 3, 1889 ..... 45&10%
Coldbrookdale Iron Co. 60%
Utica P. S. T. Skeins 60%
Utica Turned and Fitted 35%

Slates—

School, by case ..... 50@50&10%

Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.) 65%
Fitch's (Bristol) ..... 50&10%
Hotchkiss 10%
Andrews 50%
Sargent's Patent Guarded ..... 70&10&10%
German, new list ..... 40&10%
Covert ..... 50&2%
Covert, New Patent ..... 50&5&2%
Covert, New R. E. ..... 60&10&2%
Covered Spring ..... 60&10&10%

Snaths, Scythe.

List ..... 50&5&2@50&10&2%

Soldering Irons—See Irons, Soldering.

Spittoons, Cuspidors, &c.

Standard Fiberware—
Cuspidors, 8½-inch, ₱ doz., No. 5, $8; No. 5X $9.
Spittoons, Daisy, 8-inch, No. 1, $4; 10 and 11 inch, $6.

Spoke Shaves—See Shaves, Spoke.

Spoke Trimmers—See Trimmers, Spoke.

Spoons and Forks—

Tinned Iron—
Basting, Cen. Stamp. Co.'s list ....70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list ..... 70&10%
Buffalo S. S. & Co. ..... 33⅓&2%

Silver-Plated—(4 mos. or 5% cash 30 days).
Meriden Brit. Co., Rogers ....40, 15, 10&5%
C. Rogers & Bros. ..... 40, 15, 10&5%
Rogers & Bro. ..... 40, 15, 10&5%
Reed & Barton ..... 40&10%
Wm. Rogers Mfg. Co. ..... 40, 15, 10, 5&5%
Simpson, Hall, Miller & Co. .40, 15, 10&5%
Holmes & Edwards Silver Co. ..... 40, 15, 10, 5&5%
L. Boardman & Son 60%

Miscellaneous.
Holmes & Edwards Silver Co.:
No. 67 Mexican Silver ..... 50&10&5%
No. 30 Silver Metal ..... 50&10&5%
No. 24 German Silver ..... 50&10&5%
No. 50 Nickel Silver 50%
No. 49 Nickel Silver ..... 50&10
German Silver ..... 50@50&5
German Silver, Hall & Elton ..50&5% cash
Nickel Silver ..... 50&5@50&10&5% cash
Britannia 60%
Boardman's Nickel Silver ..... 50&5% cash
Boardman's Britannia Spoons, case lots ..... 60&5% cash

Springs, Door.

Torrey's Rod, regular size ₱ doz $1.30
Gray's, ₱ gr., $20.00 ..... 20%
Bee Rod ₱ gr., $20.00 ..... 20%
Warner's No. 1, ₱ doz, $2.50; No. 2, $3.30 ..... 40&10@50%
Gem (Coil), list April 19, 1886 ..... 10%
Star (Coil), list April 19, 1886 ..... 20%
Victor (Coil) ..... 60@60&10%
Champion (Coil) ..... 60&10@60&10&10%
Philadelphia, 5 in., $5.00; 8 in., $7.75.. %
Cowell's ..... No. 1, ₱ doz, $18.00; No. 2, $15.00 ..... 50%
Rubber, complete, ₱ doz, $4.50 ..55&10%
Hercules 50%
Shaw Door Check and Spring .25@30@35%
Elliptic, Concord, Platform and Half Scroll ..... 60@60&5%
Cliff's Bolster Springs 25%

Squares—

Steel and Iron } .....80 &10%
Nickel-Plated } .....80 &10%
Try Square and T Bevels ..60&10@60&10&10%
Diaston's Try Square and T Bevels. 45&10%
Winterbottom's Try and Miter ....30&10%
Starrett's Micrometer Caliper Squares. 25%
Avery's Flush Bevel Squares 40%
Avery's Bevel Protractor 50%

Squeezers.

Fodder.—
Blair's ..... ₱ doz $2.00
Blair's "Climax" ..... ₱ doz $1.25

Lemon—
Porcelain Lined, No. 1 ₱ doz $6.00, 25&30%
Wood, No. 2 ..... ₱ doz $3.00, 35%
Wood, Common ..... ₱ doz $1.70@1.75
Dunlap's Improved ..... ₱ doz $3.75, 20%
Samimis ..... No. 1, $5.00; No. 2, $9; 12, $18 ₱ doz ..... 25&10%
Jennings' Star ..... ₱ doz $2.50
The Boss ..... ₱ doz $2.50
Dean's ..... Nos. 1, ₱ doz $6.50; 2, $3.35; 3, $1.90; Queen, $2.50
Little Giant ..... 50@50&5%
King ..... 40&5%
Hotchkiss Straight Flash ₱ doz $12.00

Standard Fiber Ware—See Ware, Standard Fiber.

Staples.

Blind—
Barbed, ½ in. and larger ₱ ℔ 7@7½¢
Barbed, ⅝ in. ₱ ℔ 8@8½¢
Fence Staples, Galvanized } Same price as B'rb Wire.
Fence Staples, Plain } See Trd. Rep.

Steelyards ..... 40&10@50%

Stocks and Dies—

Blacksmith's
Waterford Goods ..... 40@40&10%
Butterfield's Goods ..... 40@40&10%
Lightning Screw Plate ..... 25@30%
Reece's New Screw Plates ..... 33⅓&5@40%
Reversible Ratchet ..... 30 %
Gardner 25%

Stops, Bench.

Morrill's ..... ₱ doz $9, 50%
Hotchkiss's ..... ₱ doz $5, 10@10&10%
Weston's, No. 1, $10; No. 2, $9.25&10&5%
McGill's ..... ₱ doz $3 ..... 10%
Cincinnati ..... 25&10%

Stone—

Hindostan No. 1, 3¢; Axe, 3½¢; Slips No. 1, 4½¢
Sand Stone ..... ₱ ℔ 2½¢
Washita Stone, Extra ..... ₱ ℔ 20@21¢
Washita Stone, No. 1 ..... ₱ ℔ 15&16¢
Washita Stone, No. 2 ..... ₱ ℔ 11@12¢
Washita Slips, No. 1, Extra ..₱ ℔ 37@40¢
Washita Slips, No. 1 ..... ₱ ℔ 25@26¢
Arkansas Stone, No. 1, 4 to 6 in ₱ ℔ $1.50
Arkansas Stone, No. 1, 6 to 9 in ₱ ℔ $1.85
Turkey Oil Stone, 4 to 8 in ..... ₱ ℔ 40¢
Turkey Slips ..... ₱ ℔ $1.00@1.50
Lake Superior, Chase ..... ₱ ℔ 16¢
Lake Superior Slips, Chase ..₱ ℔ 31@32¢
Seneca Stone, Red Paper Brand ..₱ ℔ 18@20¢
Seneca Stone, High Rounds ..₱ ℔ 20@25¢
Seneca Stone, Small Whets ..₱ gro $24.00

Stove Polish—See Polish, Stove.

Stretchers, Carpet.

Cast Steel, Polished ..... ₱ doz $2.25
Cast Iron, Steel Points ..... ₱ doz 80¢
Socket ..... ₱ doz $1.75
Bullard's ..... 25@25&10%

Strops, Razor—

Genuine Emerson ..... 60@60&5%
Imitation " ..... ₱ doz $2.00, 20&10&5%
Torrey's 20%
Badger's Belt and Com ..... ₱ doz $2.00
Lamont Combination ..... ₱ doz $4.00
Jordan's Pat. Padded, list Nov. 1, '89 .50%
Electric ..... List net

Stuffers or Fillers, Sausage—

Miles' "Challenge," ₱ doz $20, 50@50&5%
Perry ..... ₱ doz, No. 1, $15.00; No. 0, $21.00 ..... 50&5@50&10%
Draw Cut No. 4, each $30.00 ..... 20%
Enterprise Mfg. Co. ..... 20&10@30%
Silver's ..... 40&10%

Sweepers, Carpet.

Bissell No. 5 ..... ₱ doz $17.00
Bissell No. 7 New Drop Pan. ₱ doz $19.00
Bissell, Grand ..... ₱ doz $36.00
Grand Rapids ..... ₱ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00 ..... ₱ doz $15.00
Magic ..... ₱ doz $15.00
Jewel ..... ₱ doz $17.00
Improved Parlor Queen, Nickeled ..... ₱ doz $27.00
Japanned ..... ₱ doz $24.00
Excelsior ..... ₱ doz $22.00
Garland ..... ₱ doz $18.00
Parlor Queen ..... ₱ doz $24.00
Housewife's Delight ..... ₱ doz $15.00
Queen ..... ₱ doz $16.00
Queen, with band ..... ₱ doz $18.00
King ..... ₱ doz $30.00
Weed, Improved ..... ₱ doz $18.00
Hub ..... ₱ doz $16.00
Cog-Wheel ..... ₱ doz $16.00
Conqueror ..... ₱ doz $22.00
Easy ..... ₱ doz $22.00
Monarch ..... ₱ doz $22.00
Goshen ..... ₱ doz $21.00
Advance ..... ₱ doz $18.00
Ladies' Friend, No. 1, ₱ doz, $15.00; No. 2 ..... ₱ doz $16.00
American ..... ₱ doz $15.00
Grand Republic ..... ₱ doz $35.00

Tacks, Brads, &c.—

List Oct. 19, 1889, extra 10&2 % cash.

Carpet Tacks—
American Iron, Blued 70%
American Iron, Tinned or Cop'd 70%
Steel, Plain or Bright 70%
Steel Tipped or Coppered 70%
Swedes Iron, Blued 70%
Swedes Iron, Tinned or Cop'd 70%
American Iron Cut Tacks 67½%
Swedes Iron Upholst'rs' Tacks, S.S. ..70%
Swedes Iron Upholst'rs' Tacks, Tinned, S.S 70%
Swedes Iron Card and Upholsterers' Tacks, Lanc 66⅔%
Swedes Iron Card and Upholsterers' Tacks, Tinned, Lanc 66⅔%
Gimp and Lace Tacks Lanc., Swedes Iron 66⅔%
Gimp and Lace Tacks, Lanc., Swedes Iron, Tinned 66⅔%
Gimp and Lace Tacks, S. S 70%
Gimp and Lace Tacks Tinned, S. S. .70%
Swedes Iron Basket or Trimmers' Tacks, Lanc 66⅔%
Miners' Tacks, S. S 70%
Bill-Posters' or Railroad Tacks, Lanc., Swedes 66⅔%
Bill-Poster's' or Railroad Tacks, S.S. .70%
Copper Tacks 50%
Copper Finish. & Trunk Nails 50%
Cigar Box Nails 50%
Zinc Glaziers' Points 50%
Picture-Frame Points 50%
Looking-Glass Tacks 50%
Brush Tacks 50%
Tin-Capped Trunk Nails 60%
Finishing Nails 65%
Trunk & Clout Nails. Black & Tin'd. 66⅔%
Common and Patent Brads 60%
Hungarian Nails 62½%
Basket and Chair Nails 62½%
Leathered Carpet Tacks 40%

Miscellaneous—
Double-Pointed 82½%
Wire Carpet Nails ..... 50&10%

Wire Brads & Nails, see Nails, Wire.
Steel-Wire Brads, R. & E. Mfg. Co.'s list.....50&10%

Tap Borers—See Borers, Tap.

Tapes, Measuring—

American.....33⅓@33⅓&5%
Spring.....40%
Chesterman's, Regular list.....25@30%

Thermometers—

Tin Case.....80@80&10%

Thimble Skeins—See Skeins.

Ties, Bale- Steel

Standard Wire, list.....50&10&5%

Tinners' Shears, &c.—See Shears, Tinners', &c.

Tinware—

Stamped, Japanned and Pieced, list Jan. 20 1887.....70&10@70&10&5%

Tire Benders, Upsetters, &c—
See Benders and Upsetters, Tire.

Tools.

Coopers'—
Bradley's.....20%
Barton's.....20@20&5%
L. & I. J. White.....20&5%
Albertson Mfg. Co.....25%
Beatty's.....30%
Sandusky Tool Co.....30@30&5%
Shaves, Cincinnati Tool Co.....20%
Lumber.
Ring Peavies, "Blue Line"...₱ doz $20.00
Ring Peavies, Common.....₱ doz $18.00
Steel Socket Peavies.....₱ doz $21.00
Mall. Iron Socket Peavies...₱ doz $19.00
Cant Hooks, "Blue Line"...₱ doz $16.00
Cant Hooks, Common Finish..₱doz$14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish.....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish.....₱ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish.....₱ doz $14.00
Cant Hooks, Clip Clasp, Common Finish.....₱ doz $12.00
Hand Spikes....₱ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₱ doz., 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₱ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₱ doz, 12 ft. $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₱ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00
Swamp Hooks.....₱ doz $18.00
Saw.
Atkins' Perfection.....₱ doz $12.00
Atkins' Excelsior.....₱ doz $6.00
Atkins' Giant.....₱ doz $4.00

Tobacco Cutters—See Cutters, Tobacco.

Transom Lifters — See Lifters, Transom.

Traps—

Game—
Newhouse.....40@40&5%
Oneida Pattern.....70&10%
Game, Blake's Patent.....40&10&5%

Mouse and Rat—
Mouse Wood,Choker, ₱ doz holes, 11@12¢
Mouse, Round Wire.....₱ doz $1.50, 10%
Mouse, Cage, Wire.....₱ doz $2.50, 10%
Mouse, Catch-'em-alive....₱ dz $2.50 15%
Mouse, Bonanza.....₱ gr $10.00
Mouse Delusion.....₱ gr $15.00
Rat, Decoy.....₱ gr $10.00, 10%
Ideal.....₱ gr $10.00
Cyclone.....₱ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₱ doz., 90¢; in full cases, ₱ doz.....75¢
Hotchkiss Imp. Rat Killer..₱ gro $18.50
Hotchkiss New Rat Killer...₱ gro $16.50

Trowels—

Lothrop's Brick and Plastering, 20&10&5@35%
Reed's Brick and Plastering.....15%
Disston's Br'k and Plastering, 25@25&10%
Peace's Plastering.....25%
Clement & Maynard's.....20%
Rose's Brick.....15@20%
Brade's Brick.....25%
Worrall's Brick and Plastering.....20%
Garden.....70%

Triers—

Butter and cheese.....25%

Trimmers, Spoke.

Bonney's.....₱ doz $10.00, 50%
Stearns'.....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₱ doz. 55&10%
Douglas'.....₱ doz $9.00, 20%
Cincinnati.....25%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list, '82.....40%

Tubes, Boiler—

See Pipe.

Twine—

Flax Twine—	BC.	B.
No. 9, ¼ and ⅛ ℔ Balls	26¢	34¢
No. 12, ¼ and ⅛ ℔ Balls	25¢	33¢
No. 18, ¼ and ⅛ ℔ Balls	22¢	32¢
No. 24, ¼ and ⅛ ℔ Balls	22¢	32¢
No. 36, ¼ and ⅛ ℔ Balls	20¢	31¢

No. 264, Mattrass, ¼ and ⅛ ℔ Balls.52@54¢
Chalk Line, Cotton, ⅛ ℔ Balls.....25¢
Mason Line, Linen, ⅛ ℔ Balls.....55¢
2-Ply Hemp, ¼ and ⅛ ℔ Balls (Spring Twine).....15½¢
3-Ply Hemp, 1 ℔ Balls.....16¢@16½¢
3-Ply Hemp, 1½ ℔ Balls.....15¢@15½¢
Cotton Wrapping, 5 Balls to ℔ ..15¢@16¢
2, 3, 4 and 5-Ply Jute, ⅛ ℔ Balls.....10¢
Wool.....6½¢@6¾¢
Paper.....13¢@14¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz..18¢

Vises—

Solid Box.....50&10@50&10&5%
Parallel—
Fisher & Norris Double Screw.....15&10%
Stephens'.....25@30%
Parker's.....20@25%
Wilson's.....55%
Howard's.....40%
Bonney's.....40&10%
Millers Falls.....40@40&10%
Trenton.....40&5@40&10%
Merrill's.....15@20%
Sargent's.....60&10&10%
Backus and Union.....40%
Double Screw Leg.....15&10%
Prentiss.....20@25%
Simpson's Adjustable.....40%
Moore's.....30%
Saw Filers—
Bonney's, Nos. 2 & 3, $15.00.....40&10%
Stearn's.....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises.....33⅓@35%
Sargent's.....66⅔&10%
Hopkins'.....₱ dos $17.50, 10%
Reading.....40&10%
Wentworth.....20&10%
Combination Hand Vises.....₱ gr $42.00
Cowell Hand Vises.....20%
Bauer's Pipe Vises.....10%
Cincinnati.....20&10%

Wagon Boxes—See Boxes, Wagon.

Washer Cutters—See Cutters Washer.

Wagon Jacks—See Jacks, Wagon.

Ware, Hollow, Enameled, &c.

Cast Iron, Hollow—
Stove Hollow-Ware—
Ground.....55&5@60&5%
Unground.....65&10@65&10&5%
White Enameled-Ware—
Maslin Kettles.....60&10&10%
Boilers and Saucepans.....40&5%
Tinned Boilers and Saucepans.....40&5%
Rustless Hollow-Ware.....50@50&5%
Gray Enameled-Ware—
Stove.....50%
Maslin Kettles.....60&10&10%
Boilers and Saucepans.....40&5%
Enameled—
Agate and Granite Ware, list Jan. 1, 1889.....33⅓&10%
Ironclad Enameled Ware...dis 33⅓&10%
Kettles—
Galvanized Tea-Kettles—

Inch....	6	7	8	9
Each....	55¢	60¢	65¢	75¢

Standard Fiber—

	Per Dozen. Plain.	Dec'r'd
Wash-Basins, 10½ in.	$2.00	$2.25
Wash-Basins, 12 in.	2.25	2.75
Keelers, 11¼ in.		4.00
Cuspidors		8.00
Spittoons, "Daisy," 8 in.	4.00	4.50
Peck Measure	4.00	
Half-peck Measure	3.50	

See also Pails.

Indurated Fiber—25%
Spittoons, No. 2, ₱ doz.....$9.00
Basins, Ringed, ₱ doz., No. 1, $4.80; No. 2, $4.20; No. 3.....$3.60
Washtubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), ₱ nest.....$7.50
Keelers, Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₱ nest.....$3.70
Butter Bowls 15, 17 and 19-inch (3 pieces), ₱ nest.....$2.25
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces) ₱ set.....$4.00
Dry Measures, 1, 2, 4, 8 and 16 qts. (5 pieces), ₱ set.....$3 00
See also *Pails.*
Silver Plated, Hollow—
4 mo. or 5 % cash in 30 days.
Reed & Barton, Meriden Britannia Co., Simpson, Hall, Miller & Co., Rogers & Brother, Hartford Silver Plate Co, William Rogers Mfg. Co.....40&5%

Washers—

Size	⅛	5-16	⅜	½	⅝	¾	1
Washers	6¼	5½	4½	3½	3	3	3

In lots less than 200 ℔, ₱ ℔, add ¼¢, 5-2 boxes 1¢ to list.

Wedges—

Iron.....₱ ℔ 3¼¢
Steel.....₱ ℔ 4 ¢

Weights, Sash—

Solid Eyes.....₱ ton $20.00

Well Buckets, Galvanized—See Buckets, Well, Galvanized.

Wheels, Well.

8 in., $2.25; 10 in., $2.70; 12 in., $3.25

Wire and Wire Goods—

Iron—
Market.
Br. & Ann., Nos. 0 to 18.....
Cop'd, Nos. 0 to 18.....
Galv., Nos. 0 to 18.....
Tin'd, Tinned list Nos. 0 to 18.
} See Trade Report
Stone,
Br. and Ann'd, Nos. 16 to 18....67½%
Bright and Ann'd, Nos. 19 to 26.67½&5%
Br. and Ann'd, Nos. 27 to 36....70&10%
Tinned.....67½%
Tinned Broom Wire.....67½@67½&5%
Galvanized Fence.....55%
Annealed Fence, Nos. 8 and 9.....65%
Annealed Grape, Nos. 10 to 14.....65%
Brass, list Jan. 18, 1884.....25%
Copper, list Jan. 18, 1884.....25%
Barb Fence.....See Trade Report
Wire on Spools.....65%
Malin'sSteel and Tin'd Wire on Spools, 50%
Malin's Brass and Cop. Wire on Spools 40%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to $2, 30%
Steel Music Wire, Nos. 12 to 30..55¢ ₱
Picture Wire.....New list 50%
Barb Wire Safety Guards, ₱ 1000, $9.00, 25%
Wire Clothes Lines, see Lines.
Bright Wire Goods—
Standard list.....85%
Wire Cloth and Netting.
Painted Screen Cloth, good quality, ₱ 100 sq. ft., $1.80 @ $1.90
Galvanized Wire Netting.....70@70&10%

Wire Rope—See Rope, Wire.

Wrenches—

American Adjustable.....40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....40&10@50%
Coes' Genuine.....50&3%
Coes' "Mechanics".....50&10@3%
Girard Standard.....65&10%
Lamson & Sessions' Engineers'.....60&10%
Lamson & Sessions' Standard.....70&10%
P. S. & W. Agricultural.....
Girard Agricultural.....
Lamson & Sessions' Agric'l..
} 75@ 7!&10
Bemis & Call's
Pat. Combination.....35%
Merrick's Pattern.....35%
Brigg's Pattern.....25%
Cylinder or Gas Pipe.....40&5%
No. 3 Pipe.....40&10%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₱ doz $4.00, 40%
Webster's Pat. Combination.....25%
Boardman's.....20&10%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....20&10%
Acme, Bright.....60&3%
Acme, Nickeled.....50&3%
Walker's.....55&3%
Diamond Steel.....55&3%
Cincinnati Brace Wrenches.....15&10%
Cincinnati Monkey Wrenches..15&10%
Tafts' Vise Wrench.....55&10&3%

Wringers, Clothes—

List March 11, 1889, 2% cash.

Wrought Goods—

Staples, Hooks, &c., list Jan. 12, 1886, 80&15@ 85%

PAINTS, OILS AND COLORS.—Wholesale Prices.

Animal and Vegetable Oils.

Linseed, City, raw..per gal.	62	@	64
Linseed, City, boiled.....	64	@	66
Linseed, Western, raw,....	—	@	60
Lard, City, Extra Winter..	—	@	55
Lard, City, Prime, present make.....	53	@	54
Lard, City, Extra No. 1.....	47	@	50
Lard, City, No. 1.....	42	@	45
Lard, Western, prime.....	—	@	53
Cotton-seed, Crude, prime.	32½@		33
Cotton-seed, Crude, off grades.....	28	@	32
Cotton-seed, Summer Yellow, prime.....	36	@	37
Cotton seed, Summer Yellow, off grades.....	32	@	35
Sperm, Crude.....	65	@	67
Sperm, Natural Spring.....	..	@	..
Sperm, Bleached Spring....	..	@	..
Sperm, Natural Winter.....	75	@	78
Sperm, Bleached Winter...	80	@	83
Whale, Crude.....	40	@	43
Whale, Natural Winter.....	47	@	48
Whale, Bleached Winter....	50	@	51
Whale, Extra Bleached.....	55	@	..
Sea Elephant, Bleached Winter.....	58	@	60
Menhaden, Crude, Sound...	22	@	24
Menhaden, Crude, Southern	..	@	..
Menh den, Light Pressed..	26	@	27
Menhaden, Bleached W'ter.	31	@	32
Menhaden, Extra Bleached	35	@	36
Tallow, City, prime.....	..	@	46
Tallow, Western, prime....	..	@	..
Cocoanut, Ceylon.....	..	@	5¾
Cocoanut, Cochin.....	6	@	5½
Cod, Domestic.....	31	@	32
Cod, Foreign.....	33	@	34
Red Elaine.....	33	@	35
Red Saponified.....₱ ℔	4¼@		4½
Bank.....per gal	25	@	..
Straits.....	27	@	..
Olive, Italian, bbls.....	85	@	..
Neatsfoot, prime.....	62½@		75
Palm, prime, Lagos....₱ ℔	5¼@		05¼

Mineral Oils.

Black, 29 gravity, 25 @ 30 cold test,.....per gal	8	@	9
Black, 29 gravity, 15 cold test.....	8½@		9½
Black, 29 gravity, summer.	6	@	7
Cylinder, light, filtered.....		@	20
Cylinder, dark, filtered	14	@	20
Cylinder, dard, st'm refined	10	@	18
Paraffine, 23½ @ 24 gravity.	11	@	12
Paraffine, 25 gravity.....	10	@	11
Paraffine, 28 gravity.....	8½@		9
Paraffine, red, 21 @ 22 gr'ty	14	@	14½
Paraffine, red,22½@23 gr'ty	12	@	13

Paints and Colors.

Barytes, Prime White..... ₱ ton.$22.00		@	22.50
Barytes, Amer. refined...20.00		@	....
Barytes, Amer. No. 1....18.00		@	....
Barytes, Amer. No. 2....16.00		@	....
Barytes, Amer., off-color.13.00		@	15.00
Blue, Celestial.....₱ ℔	5½@		7½
Blue, Chinese.....	45	@	50
Blue, Prussian.....	20	@	35
Blue, Ultramarine.....	7	@	25
Brown, Spanish.....	½@		1
Brown, Vandyke, Amer..	3	@	3½
Brown, Vandyke, English	6	@	8
Black, American Drop....	8	@	10
Black, English Drop.....	12	@	14
Black, Frankfort, Drop...	5	@	18
Black, Lamp, common...	12	@	18
Black, Lamp, medium....	19	@	25
Black, Lamp, prime.....	27	@	33
Carmine, No. 40, in bulk. 3.10		@	..
Carmine, No. 40, in boxes or barrels..... 3.20		@	..
Carmine, No. 40, in ounce bottles..... 4.20		@	..
Chalk, in bulk....₱ ton. 2.75		@	3.00
Chalk, in bbls..₱ 100 ℔ 30		@	35
China Clay, English.... ₱ ton.13.50		@	18.00
China Clay, Southern...10.00		@	11.50
Cobalt Oxide, prep'd.... 2.90		@	....
Cobalt Oxide, black..... lots 100℔.2.60		@	....
Cobalt, Oxide, black..... less 100℔.2.65		@	....
Crocus Martus, Engl.₱ ℔.	1½@		2½
Crocus, American.....	1½@		2½
Green, Paris, in bulk.....	14	@	14½
Green, Paris, 170 @ 175 ℔ kegs.....	14½@		15
Green, Paris, small pack.	16	@	21
Green, Chrome, ordinary	8	@	13
Green, Chrome, pure....	22	@	25
Lead, Eng., B.B. white....	9	@	10
Lead, Amn.White, dry in bbls		@	6¾
Lead,Amn.White, dry, in kegs		@	7¼
Lead, Amn. White, in oil, keg lots 500 ℔.....		@	7¼
Lead, White, in oil, 25 ℔ tin pails.....		@	7¾
Lead, White, in oil, 12½ ℔ tin pails.....		@	8¼
Lead, White,in oil, 1 to 5 ℔ assorted tins.....		@	9¾
Lead, Red, pkgs. 500 ℔.....		@	7
Lead, Red, kegs.....		@	7¼
Litharge (pow'd), kegs.....		@	7¼

TERMS, &c.—Lead and Litharge.—On lots of 500 ℔ or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice. Rebates, payable June 30 and December 31, if quantities specified are taken prior to those dates: To buyers of 3 tons and less than 10 tons, 4 %; 10 tons and less than 25 tons, 6 %; 25 tons and less than 50 tons, 8 %; 50 tons and upward, 10%.

Ocher, Rochelle.....	1.35	@	1½
Ocher, French Washed.....	1½@		2½
Ocher, German Washed...	1½@		3
Ocher, American.....	½@		1¼
Orange Mineral, English...	8½@		9½
Orange Mineral, French....	9	@	9¾
Orange Mineral, German ..	8½@		9½
Orange Mineral, American..	8	@	8½
Paris White, English Cliff-stone.....	90	@	1.10
Paris White, American.....	70	@	80
Red, Indian, English.....	5½@		7
Red, Indian, American....	2	@	6
Red, Turkey.....	9	@	14
Red, Tuscan	9	@	11
Red, Venetian, America.. ₱ 100 ℔.	90	@	1.25
Red, Venetian, Englisd....	1.00	@	1.45
Sienna, Italian, Burnt and Powd.₱ ℔	5	@	6½
Sienna, Ital., burnt Lumps	1½@		3½
Sienna, Ital., Raw, Powd..	5	@	6½
Sienna, Ital., Raw Lumps..	2	@	3½
Sienna, American, Raw....	1½@		1¾
Sienna, American, Burnt and Powdered.....	1½@		1¾
Talc, French.....	1½@		1¾
Talc, American.....	1	@	1¼
Terra Alba, Fr'ch. ₱ 100 ℔	72½@		80
Terra Alba, English	80	@	85
Terra Alba, American No.1	70	@	75
Terra Alba, American No.2	38	@	40
Umber, Turkey, Bnt. and Powd.. ..... ₱ ℔	3½@		4
Umber, Turkey, Bnt.Ln	2½@		3
Umber, Turkey, Raw and Powdered.....	3½@		4
Umber, Turkey, R'w Lmps	2½@		2¾
Umber, Turkey,Bnt. Amer.	1½@		1¾
Umber, Turkey, R'w Amer.	1½@		1¾
Yellow, Chrome.....	10	@	25
Vermilion, Americ. Lead..	11½@		13
Vermilion, Quicks'er, bulk.	70	@	—
Vermilion, Quicks'er, bags.	71	@	—
Vermilion, Quicksilver, smaller pkgs.....	75	@	..
Vermilion, English Import	82	@	85
Vermilion, Imitation, Eng.	8	@	25
Vermilion, Trieste.....	75	@	77
Vermilion, Chinese.....	88	@	90
Whiting,Common. ₱ 100 ℔	40	@	45
Whiting, Gilders'.....	50	@	55
Zinc, American, dry.... ₱ ℔	3½@		4½
Zinc, French, Red Seal....	..	@	7½
Zinc, French, Green Seal..	..	@	7½
Zinc, French, V. M. X.....	6	@	6½
Zinc, Antwerp, Red Seal...	..	@	6¾
Zinc, Antwerp, Green Seal	..	@	7½
Zinc, German, L. Z. O....	..	@	6¾
Zinc, V. M. in Poppy Oil,G. Seal, lots of 1 ton and over.....	10¼@		10¾
lots less than 1 ton	10½@		11
Zinc, V. M. in Poppy Oil, Red Seal,.....	..	@	..
lots of 1 ton and over....	9½@		10
Lots of less than 1 ton....	9¾@		10¼

DISCOUNTS.—French Zinc.—Discounts to buyers of 10- bbl. lots of one or assorted grades. 1 %; 25 bbls, 2 %, 50 bbls, 4 %. No discount allowed on less than bbl. lots.

Colors in Oil.

Blue, Chinese..... ₱ ℔	35	@	40
Blue, Prussian.....	20	@	45
Blue, Ultramar.ine.....	12	@	18
Brown, Vandyke.....	7	@	12
Green, Chrome.....	8	@	13
Green, Paris.....	15	@	18
Sienna, Raw.....	7	@	13
Sienna, Burnt.....	7	@	13
Umber Raw.....	7	@	10
Umber, Burnt	7	@	10

Glue.

Low Grade.....₱ ℔	8	@	10
Cabinet.....	12	@	14
Medium White.....	13	@	15
Extra White.....	17	@	20
French.....	9	@	20
English.....	10	@	15
Irish.....	12	@	15

CURRENT METAL PRICES.

MAY 7, 1890.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

IRON AND STEEL.

Bar Iron from Store.

Common Iron:	
⅜ to 2 in. round and square.. 1 to 6 in. x ⅜ to 1 in.	₩ lb 2 10 @ ....¢
Refined Iron:	
⅜ to 2 in. round and square.. 1 to 4 in. x ⅜ to 1½ in. 4½ to 6 in. x ⅜ to 1 in.	₩ lb 2.30 @ ....¢
1 to 6 in. x ¼ and 5-16	₩ lb 2.50 @ ....¢
Rods—⅜ and 11-16 round and sq.	₩ lb 2.40 @ ....¢
Bands—1 to 6 x 3-16 to No. 12	₩ lb 2.60 @ ....¢
"Burden Best" Iron, base price	₩ lb 3.00 @ ....¢
Burden's "H. B. & S." Iron, base price	₩ lb 2 80 @ ....¢
"Ulster"	₩ lb 3.10 @ ....¢
Norway Bars	4.00 @ ....¢
Norway Shapes	5.00 @ ....¢

Merchant Steel from Store.

	Per pound.
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots	2¼¢
Best Cast Steel, base price in small lots	8 ¢
Best Cast Steel Machinery, base price in small lots	5¢

Sheet Iron from Store.

	Common American.	R. G.	Cleaned.
10 to 16	₩ lb 3.00 @ 3.00¢	3.50 @	....¢
17 to 20	₩ lb 3.35 @ 3 25¢	3.50 @	3.75 ¢
21 to 24	₩ lb 3.35 @ 3.35¢	3.75 @	....¢
25 and 26	₩ lb 3 45 @	3.75 @	....¢
27	₩ lb 3.55 @ 3.63½¢	4.00 @	....¢
28	₩ lb 3.75 @ ....¢	4.25 @	....¢
	B. B.		2d qual.
Galv'd, 14 to 20,	₩ lb, 5.00 @ ...	4.75½ @	....¢
Galv'd, 21 to 24,	₩ lb, 5.37½ @ ...	5.12½ @	....¢
Galv'd, 25 to 26,	₩ lb, 5.75 @ ...	5.50 @	....¢
Galv'd, 27	₩ lb, 6.12½ @ ...	5.85½ @	....¢
Galv'd, 28	₩ lb, 6.50 @ ...	6.23 @	....¢
Patent Planished	₩ lb A 10¢	B, 9¢	
Russia	₩ lb 9½¢ @ 10¢		
American Cold Rolled B. B.	₩ lb 5¢ @ 7¢		
Craig Polished Sheet Steel	₩ lb, 8¼¢		

English Steel from Store.

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 16½ @ 17 ¢
Swaged, Cast	₩ lb 16 ¢
Best Double Shear	₩ lb 15 ¢
Blister, 1st quality	₩ lb 12 ¢
German Steel, Best	₩ lb 10 ¢
2d quality	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality	₩ lb 15 ¢
2d quality	₩ lb 14 ¢
3d quality	₩ lb 12½¢
R. Mushet's "Special"	₩ lb 45 ¢
" " "Titanic"	₩ lb 20 ¢

METALS.

Tin.

	Per lb
Banca, Pigs	23 ¢
Straits, Pigs	22 ¢
English, Pigs	22 ¢
Straits in Bars	23¼¢

Tin Plates.

	Charcoal Plates.—Bright.		Per box.
Melyn Grade	IC, 10 x 14	@	$6.25
" "	IC, 12 x 12	@	6.50
" "	IC, 14 x 20	@	6.25
" "	IC, 20 x 28	@	12.75
" "	IX, 10 x 14	@	7.75
" "	IX, 12 x 12	@	8.00
" "	IX, 14 x 20	@	7.75
" "	IX, 20 x 28	@	15.50
" "	DC, 12½ x 17	@	5.75
" "	DX, 12½ x 17	@	7.25
Calland Grade	IC, 10 x 14	@	6.25
" "	IC, 12 x 12	@	6.50
" "	IC, 14 x 20	@	6.15
" "	IX, 10 x 14	@	7.40
" "	IX, 12 x 12	@	7.65
" "	IX 14 x 20	@	7.40
Allaway Grade	IC, 10 x 14	@	5.35
" "	IC, 12 x 12	@	5.50
" "	IC, 14 x 20	@	5.35
" "	IC, 20 x 28	@	10.75
" "	IX, 10 x 14	@	6.50
" "	IX, 12 x 12	@	6.65
" "	IX, 14 x 20	@	6.50
" "	IX, 20 x 28	@	13.25
" "	DC, 12½ x 17	@	5.00
" "	DX, 12½ x 17	6 00 @	6.00

	Coke Plates.—Bright.		
Steel Coke.—IC, 10 x 14, 14 x 20		@	$5.12½
	10 x 20	@	7.25
	20 x 28	@	10.25
	IX, 10 x 14, 14 x 20	@	6.00
BV Grade.—IC, 10 x 14, 14 x 20		@	4.87½

	Charcoal Plates.—Terne.		
Dean Grade.—IC, 14 x 20		@	$5.00
	20 x 28	@	10.00
	IX, 14 x 20	@	5.80
	20 x 28	@	11.60
Abecarne Grade.—IC, 14 x 20		@	4.85
	20 x 28	@	9.87
	IX, 14 x 20	@	5.80
	20 x 28	@	11.60

Tin Boiler Plates.

I C X, 14 x 20	112 sheets	$13.00 @ $13.00
I C X, 14 x 28	112 sheets	@ 13 25
I C X, 14 x 31	112 sheets	@ 14,75

Copper.

DUTY: Pig, Bar and Ingot, 4¢; Old Copper, 3¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 45 % ad valorem.

Ingot.

Lake	@ 15 ¢
Baltimore Grade	@ 13½¢

Sheet and Bolt.

Prices adopted by the Association of Copper Manufacturers of the United States, December 5, 1889, being quotations for all sized lots.

Not wider than	Not longer than	And longer than	Weights per square foot and prices per pound. Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		22	22	22	23	24	25	28	30
30		72	22	22	22	23	25	27	31	....
36	96		22	22	22	24	26	30	33	....
36		96	22	22	23	25	27	31	35	....
48	96		22	22	24	26	28	32	....	....
48		96	22	22	25	27	29	33	....	....
60	96		22	22	27	29	34	....	....	....
60		96	22	23	28	31	....	....	....	....
84	96		23	24	29	34	....	....	....	....
84		96	24	25	30	35	....	....	....	....
Over 84 in. wide			25	27	....	....	....	....	....	....

All Bath Tub Sheets	16 oz.	14 oz.	12 oz.	10 oz
Per pound	$0.25	0.27	0 29	0.32

Bolt Copper, ⅝ inch diameter and over, per pound ....22¢

Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles, over 60 inches diameter, up to 96 inches diameter, inclusive, 5 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles, over 96 inches diameter, 6 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Segment and Pattern Sheets, 3 cents per pound advance over price of sheets required to cut them from.

Cold or Hard Rolled Copper, 14 ounces per square foot and heavier, 1 cent per pound over the foregoing prices.

Cold or Hard Rolled Copper, lighter than 14 ounces per square foot, 2 cents per pound over the foregoing prices.

Copper Bottoms, Pits and Flats.

	Per pound.
14 ounce to square foot and heavier	26¢
12 ounce and up to 14 ounce to square foot	27¢
10 ounce and up to 12 ounce	29¢

Circles less than 8 inches diameter 2 cents per pound additional.

Circles over 13 inches diameter are not classed as Copper Bottoms.

Tinning.

Tinning sheets on one side, 10, 12 and 14 x 48 each	8¢
Tinning sheets on one side, 30 x 60 each	30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each	15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each	12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.) each	12¢
Tinning sheets on one side, other sizes, per square foot	2½¢

For tinning both sides double the above prices.

Planished Brass and Copper.

14 x 48.

14 and 16 oz. and heavier..31¢. By the case...30¢ ₩ lb
12 oz. and lighter.....33¢. By the case...32¢ ₩ lb

24 x 48 and 30 x 60.

14 and 16 oz. and heavier..44¢. 12 oz.....37¢ ₩ lb

Seamless Brass and Copper Tubes.

O. G.	N. G.	⅜	½	⅝	¾	⅞	1	1¼
8-14	6-12	37	33	30	29	28	27	24
15	13	38	33	31	30	29	28	25
16	14	39	34	32	31	30	29	25
17	15	40	35	33	30	31	30	26
18	16	42	36	34	32	31	30	27
19	17	43	37	35	34	33	32	29
20	18-19	44	39	37	36	35	34	31
21	20	46	41	39	38	37	36	34
22	21	48	42	40	39	38	37	36
23	22	50	44	42	41	40	39	39
24	23	53	46	44	43	41	40	41
25	24	56	49	46	45	44	43	45

Copper, Bronze and Gilding Tube, 3¢ ₩ lb additional.

Brazed Brass Tubing. (To No. 20, inclusive.

Above 5-16 inch to 3 inch, inclusive	35¢
Plain, above 3 inch	45¢
Plain, 5-16 inch	45¢
Plain, ¼ inch	60¢
Plain, 3-16 inch	$1.00
Plain, ⅛ inch	1.50
Fancy Tubing, Brass, to No. 20, inclusive	43¢ ₩ lb

Bronze Tubing, 3¢ ₩ lb more than Brass.

Discount from list ....25 @ ... %

Roll and Sheet Brass.

Discount from list ....25 %

High Brass Rods.

Over 1 inch diameter	27¢
¼ inch to 1 inch diameter, both inclusive	24¢
No. 8 and less than ¼ inch diameter	26¢
Smaller than No. 8	30¢

Hexagon, Octagon and Square, 2¢ ₩ lb advance over Round Rods.

Spelter.

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.

Western Spelter	6½¢
"Bertha"	9¢

Zinc.

Duty; Sheet, 2½¢ ₩ lb.

600 lb casks	6½¢
Per lb	7¼¢

Lead.

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 3¢ ₩ lb.

American	4½¢
Newark	4¼¢
Bar	4½¢
Pipe, subject to trade discount	6 ¢
Tin-Lined Pipe, subject to trade discount	15¢
Block Tin Pipes, subject to trade discount	45¢
Sheet, subject to trade discount	6¾¢

Solder.

½ @ ½ (Guaranteed)	14¾¢
No. 1	11½¢
Extra Wiping	11¼¢ @ 11¾¢

The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

Antimony.

Cookson	₩ lb 28¢
Hallett's	" 21¢

ALUMINUM.

Prices in Ingots.

$2.00 ₩ lb in lots of 1000 lb and over.
$2.25 ₩ lb in lots of 500 lb and over.
$2.50 ₩ lb in lots of 100 lb and over.

Prices Per Pound on Rolled Sheets.

(Brown & Sharpe, Standard Gauge.)

Wider than... And including...	2 in. 10 in.	10 in. 14 in.	14 in. 18 in.	18 in. 22 in.	22 in. 24 in.
Up to No. 20 inclusive	$2.50	$2.60	$2.80	$3.00	$3.20
Nos. 21, 22, 23 and 24	2.60	2.70	2.90	3 10	3.30
Nos. 25 and 26	2.70	2.80	3.00	3.20	3.40
Nos. 27 and 28	2.80	2.90	3.10	3.30	3.50

Sheets, thinner than No. 28 gauge and wider than 24 inches, special prices not less than $3 per pound.
Add 3c cents per pound for sheets cut to particular widths and lengths.
Sheets rolled to .001 in. and under, 50 cents per ounce.
Leaf in books, 20 cents per book; 75 per pack of 10 books, sheets 5 x 5 inches.

Aluminum Tubing.

From $4 per pound upward, according to size and thickness of walls.

Aluminum Castings.

From 50 cents upwards per pound extra over the cost of the metal in ingots, according to the number wanted, weight, the difficulty of casting, cost of patterns, &c.

Aluminum Wire in Coils.

(Brown & Sharpe, Standard Gauge.)

	Per lb
All numbers up to No. 1 (.004 in.) inclusive	$3.00
Nos. 15 (.05706 in.) to 22 (.02534 in.) inclusive	3.25
Nos. 23 (.02571 in.) and 24 (.0201 in.) inclusive	3.50
Nos. 25 (.0179 in.) and 26 (.01594 in.) inclusive	3.75
Nos. 27 (.014195 in.) and 28 (.012641 in.) inclusive	4.00
Nos. 29 (.011257 in.) and 30 (.010023 in.) inclusive	4.25
No. 31 (.008928 in.)	4.50
No. 32 (.00795 in.)	4.75
No. 33 (.00708 in.)	5.00
No. 34 (.00630 in.)	5.25
No. 35 (.00561 in.)	5.75
No. 36 (.00500 in.)	6.25
No. 37 (.00445 in.)	7.00
No. 38 (.003965 in.)	8.50
No. 39 (.003531 in.)	12.00
No. 40 (.003144 in.)	16.00

Spooling, on 1-pound spools, 15 cents per pound extra.
Spooling, on 10-pound spools, 5 cents per pound extra.